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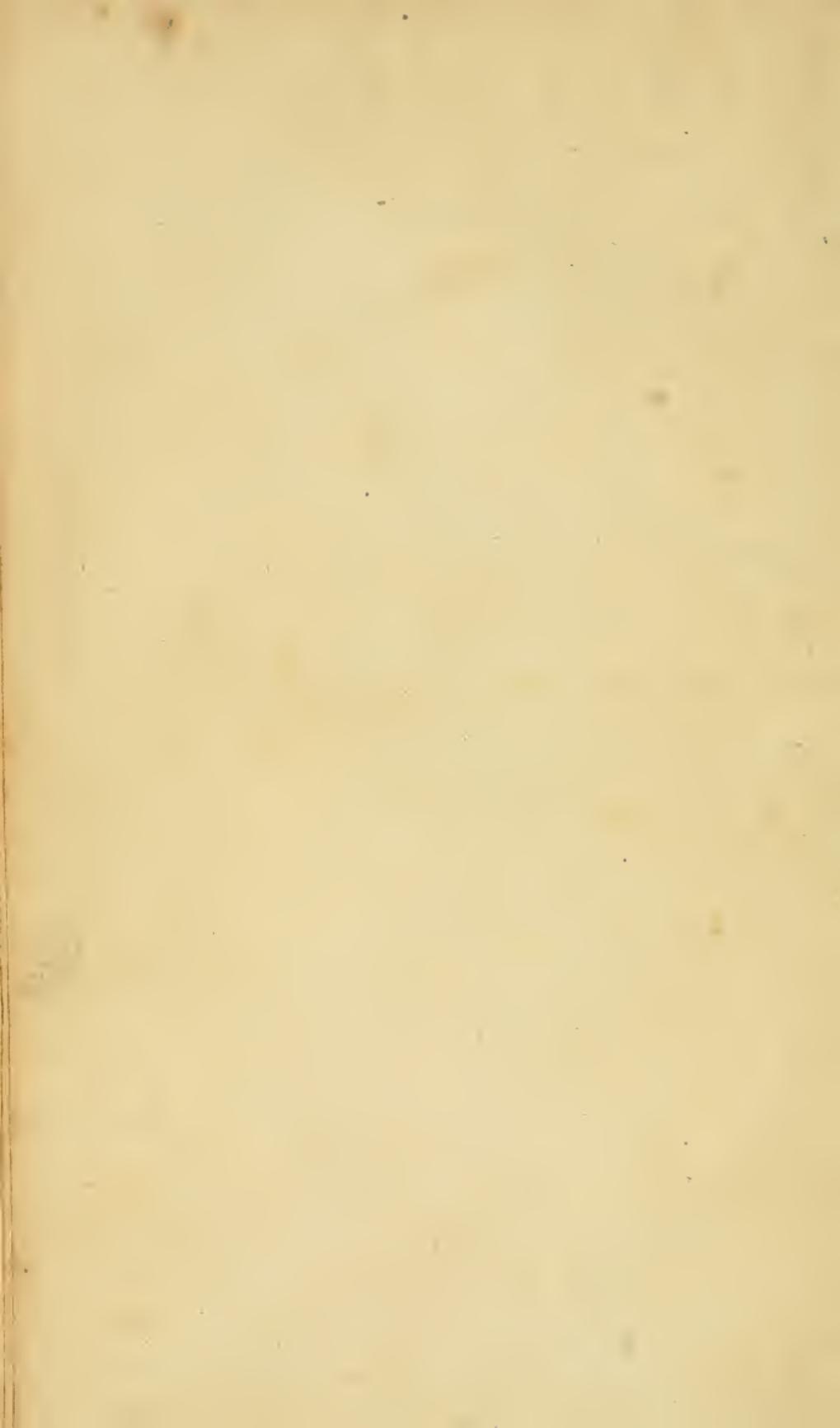
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A

PRACTICAL TREATISE

ON THE

DISEASES OF THE STOMACH,

AND OF

DIGESTION.

[ENTERED AT STATIONER'S HALL.]

Printed by T. Curson Hansard,
Peterborough-Court,
Fleet-Street.

A

PRACTICAL TREATISE

ON THE

DISEASES OF THE STOMACH,
AND OF
DIGESTION;

INCLUDING

THE HISTORY AND TREATMENT OF THOSE AFFECTIONS
OF THE

LIVER

AND DIGESTIVE ORGANS,

WHICH OCCUR IN PERSONS WHO RETURN FROM

The EAST or WEST INDIES;

WITH

OBSERVATIONS ON VARIOUS MEDICINES,

AND PARTICULARLY ON THE IMPROPER

USE OF EMETICS.

BY ARTHUR DANIEL STONE, M.D.
COLL. REG. LOND. MED. SOC.

Στόμαχος ήδουνης καὶ ἀηδίης ἡγεμών·
ΑΠΕΤΑΙΟΣ· τερπὶ αἰτιῶν καὶ σημεῖων χρονίου παθῶν.—Βιβλ. Β. κιφ. 7.

L O N D O N :

PRINTED FOR CADELL AND DAVIES, STRAND;
SOLD ALSO BY CUTHELL AND MARTIN, MIDDLE ROW,
HOLBORN; AND CALLOW, CROWN COURT,
PRINCES STREET, SOHO.

1806.

1592

TO THE

REV. ROBERT MARK DELAFOSSE, L.L.B.

DEAR SIR,

DURING upwards of ten years practice as Physician at Richmond in Surry, the pleasures and advantages derived from your society, and the sincerity of your friendship, were a source to me of the highest satisfaction; and your very able, kind and assiduous exertions in the education of two of my sons whilst under your care, and the sincere regard you still

extend to them and to all my family, demand from me the warmest gratitude:—your excellence in the education of youth is best illustrated by the never failing attachment to you, through life, of all your pupils.—I heartily wish that, instead of a ~~tre~~cise on disease, which to you cannot be interesting, I could offer you some valuable church preferment, which might enable you to retire from the fatigue of your school, and would furnish any flock with the best of pastors;—or that you were already elevated to some situation of dignity and profit, which you amply

merit, and would greatly adorn; I should then assure myself of a patron possessed of the power, as well as the disposition, greatly to promote the interest and welfare of the author of this treatise, who is happy to have any opportunity of publickly declaring, that he is and always shall be

Your sincere and obliged Friend,

ARTHUR DANIEL STONE.

London, April 18th, 1806.

P R E F A C E.

THIS publication has been for some time withheld from the press, on account of the expected appearance of a Treatise on the Abdominal Viscera by my friend Dr. Pemberton :—it appears however, as indeed he had previously very candidly informed me, that his plan very little interferes with mine :—and the observations on Diseases generally, and the cautions respecting Emetics particularly, as well as what I have said respecting the state of those who return from the East and West Indies, together with the anatomical and

physiological observations; if they are of any value, are of as much now, as before his publication:—his treatise is noticed in my account of Marasmus (§ 20) and in my observations on the absorption of mercury (§ 98) and the perusal of his treatise has not suggested to me any other alteration.

The importance of the subjects which I have considered, will not be disputed, and in the consideration of them I have thought it more likely to be useful to endeavor to lay down general principles and to avoid minute detail.—I may be blamed by some for having too circumstantially introduced various individual drugs, their doses and combinations; and by others for having avoided the introduction of prescriptive formulæ; to the first of these objections I reply, that every individual sub-

stance used as medicine, is worthy of the most attentive and serious observation, as also the different modes in which it may be combined and quantities of it which may be proper to produce the particular effect desired in any particular state of disease; and to the last, that medical men ought to be supposed not to want formulæ to be written for them, and to others they must be useless, as they would be unintelligible.

The experiments (§ 12) may perhaps be looked upon as trivial, but as the coagulation of milk is one thing, and the separation of the watery part from the curd, which was before floating in it, is another, it was thought proper to introduce them.

The reflections which I have introduced on the use of opium, were formed from attention many years since to the practice

and observations of Dr. Pitcairn, and I am happy to have an opportunity of acknowledging the great advantages I derived from that gentleman, from Dr. Budd, and from the late Drs. Caulet and Austin during long and repeated attendance at St. Bartholomew's Hospital.

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PART I.

ANATOMY AND PHYSIOLOGY.

CHAPTER I.

ANATOMY.

1. IT is not intended to enter into a tedious anatomical description of the Stomach and Intestines: those to whom an accurate knowledge of these parts is important, cannot acquire it without patient attendance on anatomical demonstrations and dissections; in the course of which the student should consult the accurate descriptions already published. This being intended as a practical Treatise on the

Diseases of the Stomach, Anatomy and Physiology will be introduced only as far as may appear useful to rectify error, and in the illustration of disease ; and the intestines and other abdominal viscera will be considered no farther than may appear requisite to elucidate their connection with the stomach. I attempt brevity and perspicuity.

2. The stomach and intestines are said to have three coats, the peritoneal, muscular, and villous.—Now the peritoneal covering cannot be properly called an intestinal coat, being common to all the contents of the abdomen ; being wanting on the posterior surface of the duodenum ; and the duplicatures, where it approaches and leaves the stomach and intestines, being pervious to any air or fluid which may be deposited there. It has been

customary to give the name of intestinal coat to the muscular fibres arranged between the peritoneum and the villous membrane, the fibres being uniform and closely connected together; but since these and all other muscular fibres owe their connection with each other to cellular membrane, the interstices between the fibres are pervious to fluid and aerial matter, and the name of coat, which in anatomy should signify a containing membrane, is improperly given to it. There remains then only the villous membrane, and there is in fact only this one proper intestinal coat, or containing membrane of the aliment and all other substances introduced into the intestinal canal.

3. A cuticular lining within the villous membrane has been supposed to exist by a great number of Anatomists, and there

is one preparation in the collection of the late Dr. Hunter, which has hung suspended for fifteen or twenty years by a very fine membrane, certainly very much resembling cuticle, and strong enough to suspend a large portion of the ileum; and this was demonstrated by the late Mr. Cruikshank, as a cuticular covering detached in the preparation from the villous membrane; but on minute examination, it is evident that it is the villous membrane itself; and the substance from which it is detached, and which is also detached from the muscular fibres and was mistaken for the villous membrane, is nothing more than cellular membrane; or what was improperly called the nervous coat by Baron Haller, and the older Anatomists, and in which a multiplicity of arteries are seen imbedded, many of which supply the

follicular glands contained in this cellular substance, and many more of these minute arterial, and of absorbent vessels open through the villous membrane or supposed cuticular lining into the intestinal cavity, and give the villous appearance to this membrane, which, as detached in the preparation, has many perforations which appear to be the orifices of follicles. Cuticle detached from the skin appears uniform in its surface, sometimes wrinkled; but here the membrane is regularly studded with short transverse opaque lines resembling a small pattern in a napkin, these are very probably the ends of fasciculi of absorbents and small arteries torn off from the cellular membrane and adhering to the villous membrane, of the internal surface of which last their final terminations form a part: their openings at all

times are too minute to be discovered by the eye, and in the preparation they appear to be totally obliterated, being closed by those portions of coats of vessels which are lacerated from the cellular membrane and from their own continuity, and produce the opaque spots here described, in the villous membrane, the resemblance of which to cuticle is much greater in this part than in the jejunum, where it is thicker and still more so in the stomach. Some Anatomists have considered the villous membrane as originating from the cuticle, and bearing a resemblance to it,^a and the similitude is probably much greater than is commonly supposed:—it is true that cuticle is in man easily traced through

^a Oritur ab epidermide, hinc et hujus adinstar de-structa, denuo resarciri potest. Leber Prælectiones Anatomicæ. Ventriculus.

the oesophagus to its termination at the cardia, particularly when arsenic has been swallowed; and this is still more obvious in comparative anatomy :—Such termination however appears not to differ from that of the cuticle passing from the face near the mouth to the lips: now there is no doubt of the lips being covered with cuticle, thinner than that upon the skin of the other parts of the body, though the appearance of its termination at the lips is equally striking with that at the cardia.

4. It certainly is difficult to conceive that a membrane thin as the cuticle, should be the only containing membrane of the stomach and intestines, yet, that it is so, cannot be doubted, since this membrane alone is impervious to fluid, and it is to be considered that this want of permeability is all that is required of it:—

The strength of the intestinal canal depends on the peritoneum, the muscular fibres, and various portions of cellular membrane, particularly on that portion of it which is placed between the muscular fibres and the villous coat, and gives firmness to the villous coat in the same manner as the skin on the surface of the body gives firmness to the cuticle. In animals who swallow hard unmasticated food, as in the ostrich, the villous membrane has the appearance of horn or thickened cuticle, through which large follicles open, supplying an abundance of fluid from glands, as large as common peas, situated immediately behind it.

5. The want of elasticity in the villous membrane is very manifest:—the peritoneal covering by its elasticity, adapts itself to the altered state of the part when

contracted or dilated, and is never found corrugated, except on the great intestine, and here the sacculated appearance arising from the contraction of the longitudinal muscular bands, is not owing to want of elasticity in the peritoneum, the action of these longitudinal bands gives opportunity to certain portions of the transverse muscular fibres to act forcibly, the peritoneum follows this contraction, as it does the altered form of the part in every instance; and hence the sacculated appearance: the villous membrane has no such power of adaptation; in the contracted state of the stomach, it is corrugated into convolutions, in the jejunum it forms valvulae conniventes, in the ileum when contracted, it has some corrugation, and in the great intestines the corrugations resemble those of the stomach.—In the jejunum of the

fœtus, valvulæ conniventes are not found, but are formed after birth from the contraction of the intestine after it has been distended with food, when the villous membrane never can contract itself to its original proportional calibre, but is thrown into plicæ by the contraction of the muscular fibres.—In the fœtus, before valvulæ conniventes are formed, the difference of diameter of the jejunum when distended from that of the ileum is not nearly so great as in the adult, where the diameter of the jejunum to that of the ileum is nearly as two to one; this explains the presence of the valvulæ conniventes in the jejunum and their absence in the ileum.—The stomach of the fœtus is often found slightly corrugated and nearly empty, and unless it be found distended with its contents, we are not warranted in the conclu-

sion that the corrugations of the villous membrane of the stomach owe their primary origin solely to contraction of the muscular fibres after this viscus has been distended: this however is probably the case, and it is certainly so to a great degree, since the corrugations of the adult stomach, when it is found in a contracted state, are proportionally much greater than they ever appear in a foetus. That digestion takes place in the foetal stomach is highly probable; it has been found by Dr. Hunter covered internally with a substance taking the shape of the stomach, and which had the appearance of coagulable lymph, and he concluded that this matter was secreted in order to be digested:—Morgagni found the stomach not empty^b in a foetus at about five months,

^b De sed: et causis marborum, 48. 9.

and further proofs of foetal digestion are given by Mr. Cruikshank.^c The words of Haller, when speaking of the chick in the incubated egg on the fourteenth day are these,^d “ il y a de la bile et une espece “ de lait caillé dans l'estomac ; ” and on the sixteenth day^e “ une partie des intestins commencent à paroître irritables, “ et a former des noeuds a l'endroit “ irrité.” Hence we may be induced to conclude that both digestion and peristaltic motion take place in the foetus to some small extent, and that the slight corrugations found in the villous membrane of the stomach at the time of birth, are the consequence of previous muscular action : we

^c Anatomy of the absorbing Vessels. 2d Edit. 4to. 1790. p. 163

^d Sur la formation du cœur dans le poulet. Vol. 1, p. 323. Lausanne, 12mo, 1758.

^e Ibid. p. 347.

are not however to adopt the notion of Haller that the foetus feeds on the fluid which surrounds it; a much more rational conclusion from all the appearances seems to be, that matter is secreted into the stomach for the purpose of instituting the processes of digestion and peristaltic motion, and after being digested is again absorbed: and that this matter having been previously assimilated with the blood of the foetus, produces but little change in the bile which may have passed into the duodenum, and no necessity for discharge of fæces, which rarely takes place.

Whether corrugations in the stomach may have been originally formed for the purpose of increase of surface for secretion and absorption, which is to be considered as the use of these and of the valvulæ conniventes, or whether both are equally

the result of muscular action of the circular and longitudinal fibres, it is certain that from this action very soon after birth the valvulae conniventes are formed, and the rugae of the stomach when contracted very much increased; the infant sucks greedily, the stomach and jejunum become so much distended, that on their contraction the villous membrane is immediately thrown into plicae, and any future distension from food at any period of life is commonly inadequate to the total abolition, even for a short time, of the valvulae conniventes: these however may be made totally to disappear on strong inflation.

6. It is well known to Anatomists, that the villous membrane alone is involved in the valvulae conniventes and corrugations, and that their attachment and connection is preserved by the elongation of small

portions of connecting cellular membrane and of very minute blood-vessels and absorbents; thus the connection of the villous membrane when thrown into these plicæ becomes much looser than before, it is no longer strengthened by the adhesion of dense cellular membrane, and it follows, that repeated great distensions of the stomach or intestines, followed by contractions to their smallest possible size, will induce a weaker attachment of the villous membrane, as the very slender fibres which are elongated with the rugæ from behind will soon become unequal to the task of restoring them to their former state of adhesion when the muscular fibres are dilated:—how very slender this attachment of the rugæ is, becomes very evident when we look at the edges of a section of the stomach or intestine when in a state of

contraction, the slight connecting medium however sufficiently recovers itself by its elasticity in all cases of moderate contraction of the stomach, when followed by distension.

7. It is hoped that from what has been said (5. 6.) it appears sufficiently manifest that the villous coat differs from cellular membrane in one of its most characteristic qualities, that of elasticity :—it seems hardly possible to find a membrane in the body which differs more than the peritoneum from cellular membrane, the peritoneum being firm and not allowing of transudation of air or extravasated fluid, yet like the cellular membrane it is very elastic :—The villous membrane both wants elasticity and allows not of transudation. These points are more particularly urged from the circumstance of that very able and

experienced teacher of medicine, Dr. G. Fordyce, having promulgated not only in his Lectures, but in his Essay on Digestion published not many years since, that^f “the nervous and villous coats seem “to be nothing but cellular membrane “growing thicker and thicker, until on “the inside of the stomach it becomes “sufficiently firm and close to retain the “substances contained in the cavity.”— This opinion is grounded on microscopic observation, and if he had examined the peritoneum or any other membrane in the same manner, he would have found an equal or greater resemblance of cellular membrane:—unless indeed which is highly probable, he mistook the very numerous orifices of follicles, and of the secerning arteries and of the absorbents,

^f P. 11.—8vo. Lond. 1791.

for cells which he describes. The muscular fibres have as much resemblance as the villous coat to cellular membrane:— yet none but the visionary philosophers, who supposed the whole body to consist of cellular membrane, have conceived muscular fibres to be cellular membrane:—they differ from it in their qualities, having powers of contraction independent of elasticity, and are no more like cellular membrane than they are to a nerve. It is hardly necessary to instance anasarca and emphysema as proofs of the permeability of cellular membrane to extravasated air and fluid, or longer to dwell on the qualities which distinguish the villous coat from cellular membrane, that it is neither permeable nor elastic.

8. There is another passage in Dr. For-dyce's book, which it would be wrong in,

this place to leave unnoticed:---he states, that the back of the duodenum being without the peritoneal coat, gives an opportunity of greater distention than can take place in the lower intestines: now the peritoneum being elastic, and the back part of the duodenum being attached to the vertebræ which are not so, the opportunity of distention must be smaller in the duodenum than in the other intestines which are wholly surrounded by peritoneum: that part of the peritoneum which passes over the duodenum always appears firm, and it seems a more reasonable conclusion that the duodenum is thus firmly attached to prevent its being greatly distended, whereby any regurgitation into the ductus communis chole-dochus is prevented, which might take

place from an alteration in the obliquity of its direction, if any great changes took place in the dimensions of the intestine into which it enters: again, if the duodenum were at any time greatly distended, the pylorus would in consequence be forced open so as to facilitate regurgitation through it into the stomach:--- but a more convincing argument against any great distention of the duodenum being natural to it in its healthy state, is that valvulae conniventes are not found in it, in the same proportion as in the jejunum.

9. The glands, called glandulæ solitariæ, and those of Peyer, called glandulæ agminatæ, which last are found only in the small intestines, principally in the ileum, are of importance in a medical point of view, as being the parts in

which ulceration commonly begins ;—but their appearance is very uncertain, glandulæ agminatæ particularly are seldom found the same in any two different subjects. Glandulæ solitariæ are for the most part numerous in the stomach near the pylorus, and through the great intestines, particularly in the lower part of the rectum :—the intention of their being placed near the pylorus seems to be, that when pressed upon by a substance too large and hard for digestion, their secreted fluid may be given out so as to facilitate the passage of such substance through the pylorus ; and the reason of their being numerous near the anus, seems evidently, in like manner, intended to facilitate the alvine evacuation, and on the same principle as they are found in great numbers in the crops of birds near the entrance into the

gizzard.—In diseases of the intestinal canal; for instance, of the colon and rectum, when the diameter of the gut is diminished from the thickening of its substance, or from any other cause, these glands are found large and in great numbers, so as to render it probable that they are newly formed for the secretion of lubricating fluid to render the passage easier through the strictured part; or at least that glands, which were scarcely visible before, become enlarged from the obstruction so as to produce the same effect.

CHAPTER II.

PHYSIOLOGY.

10. TO such as have leisure and apparatus for chemical experiments, and to those who have no repugnance to torturing of animals, it must be left to improve on the discoveries respecting digestion, which were made towards the close of the last century.—In the present state of physiology, it will be granted that the gastric fluid is a solvent, and that the bile contains mineral alkali; and it appears highly probable from there never being any appearance of the absorption of chyle till the aliment has passed the entrance of the gall duct into the duodenum, that some action

of the bile upon the dissolved aliment, and most likely that of the mineral alkali contained in it, is necessary to the production of chyle. It will not be attempted here to prove the acidity of gastric juice, but merely to draw some inferences from facts that have been made known.

11. Professor Dumas^h relates his having given drink to a dog before he was killed, the dog having been kept without food, that the water the dog had drank was wholly absorbed, and the fluids of the stomach were found in very small quantity ; in a dog that had been starved for a longer time, all the gastric and pancreatic fluid, all the mucus of the primæ viæ and of the peritoneum disappeared ; and in a dog that died of hunger the absorbents appeared to

^h Charles Louis Dumas, de Montpellier. *Principes de Physiologie*. Tom, IV. p. 61, 8vo. Paris. An, xi. 1803.

have acted on the substance of the digesting viscera : hence it appears, when animals are kept without food for a length of time, that gastric fluid is not formed : now, since in the experiments of Spallazani, Dumasⁱ and others, made with the view of obtaining gastric fluid free from an intermixture of aliment, the animals subjected to experiment were necessarily kept starving for a considerable time ; it is to be inferred that gastric fluid was not formed at all, or in very small quantity : it is more reasonable to conclude that the fluid secreted into the stomach in these experiments was principally that lubricating fluid which is necessary for the transmission of indigestible substances through the pylorus, and that all fluids procured in this manner will but very imperfectly resemble the true

ⁱ Vol. IV. Chap. ix. p. 274.

solvent gastric fluid. From experiments on the very imperfect gastric fluid thus obtained, Spallanzani has left us quite in the dark as to its chemical qualities, Dumas speaks of sponges imbued with tincture of turnsol or syrup of violets acquiring a red colour in the stomach of dogs; and Scopoli,^k in his analysis of the gastric fluid, at the instance of Spallanzani, which has not hitherto been improved upon, informs us that it contains water, gelatinous matter, sal ammoniac and earth: from this statement, that sal ammoniac is contained in the gastric fluid which may very probably be decomposed in the stomach to answer the purposes of digestion; and from the observations made by Mr. Hunter,^l

^k Spallanzani Diss. 6. Sect. 244.

^l On the digestion of the stomach after death; a fact proved to be true by daily observation on animals who die with their stomachs in full vigor.

who never made a hasty conclusion in physiology, that in all animals upon which he made observations or experiments to discover whether or not there was an acid in the stomach, he constantly found that there was an acid, but not a strong one in the juices contained in that viscus in a natural state, I was induced to make the following very easy trials. Many of a similar nature were made at the same time, but are not recorded here, as I soon after learned from Dumas's^m publication, that Professor Werner, of Tubingen, had published his Experiments on Chyme. I have not been able hitherto to obtain Werner's treatise; from the report of Dumas, he attributes the formation of the chyle in digestion solely to the action of the bile on the chyme, by taking away its oxygen and acid qualities; and states that aliment dissolved and

reduced into a substance like chyme, when impregnated with bile, changes its colour, consistence, odor, and taste, and takes all the qualities of chyle.

12. From the invariable coagulation of milk in the stomachs of all animals, it appeared probable that it was necessary for milk to be deprived of its watery part in order to solution.

An ounce of skimmed milk was coagulated by twenty drops of muriatic acid, the liquor was filtered through fine muslin, and forty drops of muriatic acid were added to the curd ; this mixture was again filtered ; the curd was somewhat less in quantity, and in finer particles : to the curd remaining after the second filtration, eighty drops of muriatic acid were added, and the solution was complete : a scruple of dried natron was added to this solution, and the curd in fine particles was again precipitated

with effervescence; another scruple of natron was added, and almost the whole of the curd was redissolved.

An ounce of skimmed milk was coagulated as before, with twenty drops of muriatic acid, but it was not filtered; forty drops, and afterwards eighty drops of muriatic acid were added to the unfiltered mixture, as in the former instance to the filtered curd, but nothing like solution of the curd in the whey was produced, nor even on the addition of larger portions of acid.

These experiments were several times repeated with the same results, in some instances of the repetition of the latter experiment the mixture at last was filtered, when the appearances of solution of the filtered curd on the further addition of eighty drops of muriatic acid, and of its precipitation with natron, appeared,

but not so perfectly as in the repetition of filtration, when a smaller quantity of acid was employed. In some instances ten drops only of muriatic acid were used for the coagulation of the milk, and the curd, when filtered, was of a looser and more cohesive texture;—from retaining more of the watery part of the milk, it appeared in larger quantity, and required afterwards more filtration and more acid for its complete solution.

Hence it appears that there is a substance in nature which coagulates milk, and which also after the watery part is separated from the coagulum, is capable of dissolving the latter; and that on the addition of another substance something very much like chyle appears, or in other words, the curd is reproduced:—and it appears reasonable to conjecture that a

process, not very dissimilar, takes place in the digestion of milk ; that in the first place the milk is coagulated by the gastric fluid, that on its coagulation the watery part is in part absorbed, and in part passes the pylorus : that the curd is afterwards dissolved by the gastric fluid in the stomach, that this solution gives a precipitate in the duodenum on being mixed with the bile, which precipitate is true chyle.

It would be endless and not very useful to give the result of different trials of milk with different acids, and of the changes which took place on adding afterwards different alkalis ; but it appears worthy of notice, that the curd filtered and dissolved by muriatic acid, as above stated, on the addition of twenty drops of aq. ammon. puræ, instead of natron, is precipitated in the form of a cohesive mass

resembling cream cheese, and not at all resembling chyle, or like that produced by natron :—on the addition, however, of more of the aq. ammon. puræ, the whole of the precipitate is re-dissolved into a whey-colored fluid.

13. The relation of the following trials with distilled vinegar is foreign to the present object, but it is impossible to resist the temptation of bearing testimony to the accuracy of that most excellent and much to be lamented Chemist, Scheele of Sweden : —he has ⁿ established the solution of curd or cheese in mineral acids, and states that vegetable acids dissolve little or nothing of the curd ;—but Parmentièr and Deyeux^o state in opposition to him, that distilled

ⁿ Scheele's Chemical Essays, xvij.

^o Précis d'Expériences et Observations sur les différentes Espèces de Lait. P. 100, & seq. 8vo. Strasbourg. An. 7.

vinegar has more action on the caseous matter than any other acid, and dissolves it entirely, that the solution of it in the mineral acids is very incomplete, and that it does not take place at all unless the acids are very much diluted:—the muriatic acid in its common state of concentration was used in the experiments here related, and as has been stated, the solution of the separated curd was complete, and the following trials with distilled vinegar are not more favorable to the positions of Parmentier and Deyeux.

An ounce of skimmed milk was coagulated by forty drops of distilled vinegar: —the precipitation of the curd took much longer time than when the milk was coagulated by a very few drops of muriatic acid ; it appeared more flaky or in larger particles, it took longer time in

filtration, and the filtered curd appeared looser or as retaining more moisture than when muriatic acid was employed :—the curd was filtered a second time after the addition of eighty drops of distilled vinegar, and a third time after the addition of eighty drops more, after each of these filtrations, the curd appeared finer or in smaller flakes, and somewhat diminished in quantity ; on adding 160 drops of distilled vinegar to the curd remaining on the last filtre, the solution was still incomplete ; on the addition of a scruple of dried natron, a remarkable white film appeared during the effervescence, which afterwards was seen no more, and on the addition of more natron, the solution was complete ; if natron were added beyond the point of saturation, the solution became of a reddish brown colour.

To an ounce of milk, distilled vinegar was added as in the last instance related, but the solution was not filtered; after each addition of the distilled vinegar, the curd appeared somewhat finer: the acid added amounted altogether to 360 drops, but nothing like solution of the curd took place;—On the addition of a scruple of dried natron, there appeared during the effervescence, a beautiful thick cream-like appearance on the surface, the mixture afterwards subsided into a light reddish brown homogeneous fluid; some little of the cream-like fluid floated on the surface, and on the addition of more natron the solution was complete.

It appears then in conformity with the statement of Scheele, that the muriatic acid is a more complete solvent of curd than the vegetable, and in contradiction

to Parmentier and Deyeux, that distilled vinegar, without the assistance of another chemical agent, produces a very incomplete solution.

14. Whether sal-ammoniac be really contained in the gastric juice of animals using animal and vegetable food? and whether any decomposition of this salt, or of the common salt used with food, take place during the process of digestion, so that the liberated muriatic acid is in fact the gastric fluid itself? and whether in that case the disengaged ammonia or natron may become an assistant to the bile in forming chyle by precipitation? All these in the present state of our know-

ledge on the subject can only be proposed

queries. The living power is allowed

certain extent to prevent the diges-

tion of the stomach : but since any known

solvent which is capable of reducing bone to a gelatinous state, would also destroy the texture of the soft parts of any living animal : and as bones are frequently found in the stomachs of carnivorous animals in such gelatinous state : it seems less reasonable to conjecture that a disengaged solvent is ready in the stomach for the solution of bone, than that a decomposition of the fluid in the stomach takes place on the introduction of the bone ; that the solvent is in a mild state in its form of previous combination, from which it is detached by its peculiar affinity for the earthy or some other component part of the bone ; which affinity may probably be regulated in the stomach in a manner hitherto unknown :—if this be so, the same instantaneous production of the

solvent, on food being introduced into the stomach, may in every case be allowed.

15. Many trials were made in precipitating the solutions of meat by different alkaline substances, the results of which were very pleasing and in a high degree satisfactory, and such as to justify the recommendation to any student who may be desirous to do himself credit by experiments, to follow the footsteps of Werner, to try the solution of different kinds of food by different solvents, and their precipitation by reagents. Such experiments patiently varied and repeated, and compared with the effects produced in the same substances by the juices of the stomachs of animals recently killed when they were in perfect health, will almost certainly elucidate much of what is hi-

thereto totally unknown in the process of digestion. Here let it suffice to state that roasted or boiled meat dissolved by muriatic acid, is precipitated either by natron, or by aqua ammoniæ puræ, and the mixture has a very strong resemblance in colour and consistence to the contents of the human duodenum and jejunum, that the whole of this mixture passes readily through a very fine sieve, but if filtering paper be used, a fine brownish substance remains on the filtre, weighing more than half the weight of the meat before its solution in the acid.

16. As it has been stated by some Physiologists from analogical reasoning on the coagulation of milk, that all fluid nourishment is coagulated in the stomach previous to its solution ; and on this ground they have argued against the use of fluid

food in disease, it is to be added here that the same substances as were used in the solution of animal flesh, when added to fluid broth gave not the smallest evidence of such coagulation; such thin broth as is fluid in the temperature of the atmosphere, when muriatic acid is added to it, deposits nearly an equal quantity of solid matter to that which is deposited by the broth without any admixture, but certainly rather less than more.

PART II.

HISTORY OF DISEASES OF THE STOMACH.

CHAPTER I.

OF THE VITIATED STATE OF FLUIDS IN THE STOMACH.

17. WHATEVER be the true chemical nature of the gastric fluid, its most common variation from the healthy state is to that of acidity: it is very difficult to determine whether acidity of the stomach depend in all instances on the introduction of acid by the mouth, or whether the

gastric fluid be sometimes secreted in a vitiated state. A great variety of acids are occasionally introduced into the human stomach with food or medicine; and that acid, which is the product of fermentation, is frequently formed in the stomach from the spontaneous changes of vegetable matter in cases of imperfect digestion, and where food is taken in so large quantity that it is impossible for any stomach to dissolve it: from the latter cause principally, the acid so perpetually troublesome to the stomachs of children appears to arise; and the cardialgia of adults may justly be supposed most frequently to have the same origin: it is constantly to be observed however that in obstructions of the liver or gall-ducts, symptoms of cardialgia occur, and that in cases of sick head-ach and of hypochondriasis, where

the strictest attention has been paid to rules of diet, the patient is not relieved till acid be evacuated from the stomach either by vomiting or purging: hence it appears probable that the gastric fluid is in itself vitiated in some diseases, having acquired the properties of an irritating acid, and being bereft of its solvent power, and that a due secretion of the bile is at all times requisite to the correction of acid in the stomach: a part of the bile neutralizing any acid matter as soon as the ingesta have passed the pylorous; and the residuum, in which the coloring matter of the bile is contained, stimulating the intestines to propel downwards any remaining uncombined acid, as well as faecal matter.—Thus the bile when duly secreted both corrects any acid that may pass from the stomach, and makes room

in the duodenum for the stomach to discharge itself of its contents by its peristaltic motion, so that the aliment cannot remain so long in the stomach as to pass into the acetous fermentation, or to undergo any spontaneous change.

18. The symptoms attending acidity in the stomach are flatulency ; cardialgia ; nausea ; vomiting ; costiveness, or purging with discoloured fæces ; foul bowels ; headache ; paleness, sometimes alternating with flushing ; increased pulse ; a tongue coated with a white or brownish fur ; increased heat, particularly on the skin of the abdomen ; loss of appetite ; sense of weight, pain, and oppression ; rigors ; languor, particularly about the eyes, with discolouration round the eye-lids ; stupor, and convulsions, or a dilated pupil so as to resemble hydrocephalus.—These symptoms oc-

cur according to the magnitude and duration of the attack, and according to the constitution of the patient.

19. It is to be observed here that the contrary state of stomach, though much less common, nevertheless sometimes occurs, as in sea-scurvy.—In my own practice in calculous cases, where alkaline medicines have been employed, and where nothing further of medical treatment has been adopted than the daily use of the water prepared with natron and the carbonic acid gas for many months and tolerably strict adherence to rules of diet consistent with the use of this water, debility of the digesting viscera has ensued, certainly without any symptom of acidity, and attended with blotches in the skin similar to those which appear in scurvy, and these symptoms have always been

speedily relieved by allowing fermented liquor and the free use of vegetables, and by prohibiting the exhibition of any alkaline matter.

CHAPTER II.

MARASMUS.

20. DR. Pemberton has entered into a curious speculation respecting emaciation as taking place to much greater extent from affection of glands of supply, than when the glands of waste are attacked by the same diseases :—the liver, pancreas, mesenteric glands, and the glands of the upper part of the intestinal canal, he has denominated glands of supply ; the kidneys, breasts, the exhalants, and the glands of the great intestines, he calls glands of waste, and from the emaciation which he describes as consequent on diseases of the spleen, he supposes that the spleen may be a gland of supply.

It is certainly reasonable, where little emaciation is induced, to suspect an affection of the kidney or great intestine, rather than of the liver, or upper portion of the alimentary canal, or of the mesenteric glands; since in the latter instances the animal is deprived of a large proportion of chyle which would otherwise be formed and converted to his nourishment.

Now that an abscess of the liver shall produce more emaciation than an abscess of the kidney, probably depends on three causes; first, the size and softness of the liver will allow of a larger abscess being formed on it; secondly, the communication with the gall-ducts is not so ready as that of the kidney with its pelvis; thirdly, the secretion of bile, which is necessary to chylification, is interrupted.

As to diseases of the pancreas, they so rarely exist alone that little is to be said with certainty as to the emaciation they may produce :—its most common affection is probably increased secretion, when (to adopt this language) this gland becomes a gland of waste.

Obstructed mesenteric glands will undoubtedly operate in producing Marasmus, like the rupture of the thoracic duct, by preventing the progress of nutritive matter absorbed, into the circulation, but we are not warranted from anatomical observation, in considering them as glands at all adapted for secretion, and consequently they cannot be considered in themselves as glands of supply :—when in a scrophulous state they will certainly, by interrupting the course of nutritive matter absorbed,

produce more emaciation than a scrophulous breast.

Diseases of the lungs produce more emaciation than affections of any other part, probably from their allowing the supply of too large or too small a proportion of oxygen to the blood :—yet the lungs cannot be considered as glands at all further than that the exhalants opening into the branches of the trachea are glands of waste. The abscess of the cellular membrane connecting the psoæ muscles is instanced by Dr. Pemberton as producing very great emaciation :—but neither the psoæ muscles, nor the cellular membrane connecting them, are glands :—supposing it to be generally true that disease of the spleen produces great emaciation ; from this circumstance, abstractedly considered,

we are not then at all more warranted in considering it as a gland of supply, than in saying that it is a muscle, or the cellular membrane connecting muscles. In all the cases given by Morgagni of diseased spleen, other viscera were also diseased :— when it is found enlarged after a long intermittent, the repeated attacks of the previous general disease have reduced the patient into a state of Marasmus, and it must not hastily be granted that its primary affections produce great emaciation : The spleen was cut away from a wounded man by Mr. John Hunter, and the patient did well, and many instances of the removal of the spleen with safety are on record :— Hoffmanⁱ relates that when the spleen is removed from dogs they rapidly increase

ⁱ Med. Rat. Syst. Tom. 1. Lib. 1. Sect. 1. Chap. 8.
§. 12.

in fatness. There is no good ground for supposing the spleen to be a gland capable of secretion, and secretion is necessary to its being a gland of supply :—it is more like the lungs than any other viscus, and the received opinion of its use seems reasonable, that the blood in the spleen, as in the lungs, undergoes some change, though less important: it must be considered to be a very forced argument that the spleen must be a gland of supply, merely because in its diseases emaciation takes place, even if the fact were proved, which is by no means the case. Nothing in disease is more important than to avoid making facts bend to theories.

21. Marasmus sometimes arises from the rupture of the thoracic duct and from other impediments in the lacteal absorbents :—from febrile action, particularly from such

diseases as are attended with hectic fever : and it may, and sometimes does depend on want of sufficient nourishment, or on consumption of the aliment by worms in the primæ viæ.

Where a sufficient quantity of aliment is used, there appear to be three principal causes why the body is in many instances inadequately nourished :—firstly, it is true that obesity very often accompanies an enormous appetite, but it is equally true that many men, who eat most voraciously, are of a very meagre frame of body :—in such people for the most part, the digestion and the assimilation of chyle into blood seem to go on perfectly well, and their want of substantial flesh on their bones depends probably on the conversion of their blood, in more than the due proportion, into excrementitious fluid by the emunc-

tories :—secondly, the digestion of aliment into chyle appears to be perfect in some instances, but the process, whatever it be, of assimilation of the chyle into blood, appears to be deficient, this is most remarkable in that state of Marasmus which not unfrequently is a symptom in diabetes : in this disease the appetite very commonly is great and the digestion is rapid, and a fluid very much like the chyle, as absorbed from the intestines, is found in the blood-vessels and produces great disturbance in the system, particularly in the kidneys : hence the treatment which has lately been so judiciously recommended is found to be highly advantageous, the diet employed being more nearly in a state of assimilation into blood than that which is procured from the vegetable kingdom : and on the principle of promoting such assimilation I

have commonly employed steel in diabetes, and generally with good effect:—thirdly, Marasmus often depends on a large quantity of food being swallowed but not digested, and it is this form of the disease which is particularly to be noticed here.

22. The most common kind of Marasmus depends upon too much eating, from this complaint the children of the poorer classes of people are totally exempt:—it shews itself frequently in young people who have never been restrained as to the quantity or quality of the *ingesta*, and it is often fatal: the stomach is found nearly in a state of paralysis from repeated over-distention by very large quantities of aliment, and from the repeated stimulus of wine and spices. Sennertus, Etmuller and others of the older writers, have gravely considered the question, whether Marasmus were owing to

magical incantation, and they were led to this consideration from the extraordinary circumstance of a young person with a great appetite being found daily to lose flesh. The stomach, when relieved from the load of the preceding day, again prompts to the repetition of meals of similar quality, and these in large quantities also, till very late in the disease, when at length the febrile symptoms increase, and the stomach falls into the same state of debility which is sometimes found in old people among the rich and luxurious, it becomes worn out before the rest of the body, and utterly incapable of performing its functions, and the cause of this debility is very much the same in both cases :—from long continued high feeding the stomach is no longer excited by any of the delicacies of diet, to all of which it has long been accustomed.

The symptoms of this disease, besides that of loss of flesh, are those of fulness and torpor of all the abdominal viscera ; and commonly the patient is weak and inactive. Most of the symptoms stated (§. 18.) occur, with this difference, that the craving after highly seasoned food commonly continues very long in the disease, and this, which at first was the cause, afterwards may be considered as a symptom of M^arasmus.

CHAPTER III.

REPLETION OF THE STOMACH.

23. THE stomach becomes loaded in various persons from the posture in which they sit when engaged in labor or in study: this posture is most familiar to shoemakers, whose thoracic and abdominal viscera are for many hours every day compressed together, as they stoop to their last: the margin of their ribs is pressed upwards so as to force the stomach against the diaphragm, and to impede the passage through the pylorus; and all the viscera of the thorax and abdomen, and every blood-vessel and excretory duct in either of these cavities suffers from the compression, which

sometimes at length induces affection of the lungs or permanent injury to the large blood-vessels near the heart :—commonly however the original affection of the stomach itself induces these people to seek relief. Taylors, engravers, and many others, whose occupation requires the same posture, suffer in the same manner :—literary people and clerks from bending to the desk or table are frequently affected with the same affection of the stomach :—some time since, women, from the pressure of stays, frequently were sufferers in the same way ; in the present fashion of dress, they are however more free from it, though it sometimes happens to those who sit long stooping to needlework.

24. This complaint is indicated by nauseous taste in the mouth with furred tongue, pain in the region of the pylorus

and sense of weight and the pain increased on pressure at the pit of the stomach :—there is always costiveness ; from the want of free passage through the pylorus the stomach becomes loaded with viscous matter :—the countenance is pale, wan, and sallow, and very shortly blackness appears under the eyelids, and frequently a jaundiced tint appears from obstruction to the free secretion or passage of the bile, and all the common dyspeptic symptoms occur.

25. There is a state of the stomach which it is of importance to notice particularly, as it has sometimes been mistaken for apoplexy : it may happen at any age, but has more commonly occurred in those who are somewhat advanced in life, and where the time of taking a dinner has by accident been delayed to a distant period from the hour of breakfast or from the last

time of eating, where the sensation of hunger has for an hour or two been unusually prevalent :—a man, accustomed to good living and unaccustomed to any sensation of hunger, sits down with eagerness, and not unfrequently makes a remarkably hearty meal :—when he has eaten largely of fish, fowl, and flesh, he feels satisfied, but on the appearance of fresh dainties in a second course, he craves again and eats again and again : he sits long at the table, and probably stirs not further than the adjoining drawing-room till the hour of rest :—he goes to bed, sometimes complaining of a slight sickness, a weight about the precordia, and commonly goes to sleep ; and soon after, is found in a state of apoplectic stertor, from which not unfrequently it is difficult to rouse him : and which has been found to depend on the

enormous quantity of the contents of the stomach distending and pressing on the coats of that viscus, so as to have brought it into a state of paralysis, and to have prevented all possibility of digestion from the time of its repletion, and the sympathy of the brain with the stomach reduces the patient to a state very nearly resembling apoplexy from extravasation on the brain itself: it requires some sagacity, and is of very great consequence, to distinguish this state of a patient from that consequent upon repletion of the blood-vessels, which is also very often the result of a hearty meal: since in this case, if the stomach be not relieved, the stupor increases and the patient is lost:—the pulse is not always a sure index of the diagnosis, as it becomes full from the sympathetic affection of the brain:—sometimes from pressure on the

epigastrium fulness of the stomach may be discovered; and the symptoms of hemiplegia never depend upon this cause:—the patient may commonly be awakened so as to swallow medicines, and that the eyes may be examined:—if the pupils equally contract; if there be no evident fixed palsy on either side; and if, from the history of the complaint, it may be traced to such a meal as has been described; there will be good reason to think that the stomach alone requires relief.

26. As to the common appearances from an overloaded stomach, they approach so nearly to those enumerated (§. 18) that it is not necessary to repeat them here.

CHAPTER IV.

POISONS.

27. TO trace the effects of the various Poisons, which have been sometimes introduced into the stomach, would require a much larger volume than it is intended now to offer to the public:—that arsenic and some other strong mineral poisons produce immediate active inflammation on the stomach is very commonly known; that copper produces inflammation with greatly increased secretion and peristaltic motion, and that antimony and zinc produce vomiting, the effects of which minerals in common with those of other emetics, will be more fully considered in some of the following pages.

28. The following case being remarkable seems worthy of insertion here, and more particularly as the component materials of the pills, here to be mentioned, were detected by Mr. WELDON, surgeon, of Wigmore-Street, who very kindly undertook at my request, and very satisfactorily accomplished, the analysis.

A middle-aged man, whom I had frequently attended in very violent attacks of gout, had been tolerably free from it for two or three months, but had not recovered that freedom of action in the lower extremities, which he possessed before he had been a sufferer from the gout: he was persuaded by a friend, who had been in the like situation, to try the effect of some pills which were daily advertised as of sovereign efficacy in such cases;—the weight of each pill was from

three to four grains, and two of these were ordered, with some very absurd directions as to the regimen to be followed and the time of their exhibition, to be taken in a day :—When sent for to this patient, I found him with hot and dry skin, full pulse, the gout flying from limb to limb, and sometimes affecting his head and stomach :—I directed a saline draught with 20 drops of antimonial wine to be taken that night ; this plan had been useful to him when under my care in several of his former attacks ; the next morning his tongue had a peculiar whiteness, resembling a covering of thin paper, such as may often be observed to ensue from the too free use of antimony :—he had perspired freely however, and seemed better :—I immediately expressed my surprise at his having the appearance of being

over-dosed with antimony, and the anti-monial wine was laid aside :—the third day he was much improved, and he then acknowledged to me that he had taken a box or two of pills, and how they had been recommended to him, that tenesmus had been very troublesome to him for a day or two, that he had been much fatigued by repeated ineffectual efforts to pass fæces, and that at length something hard fell from him and alarmed him, without any fæcal matter, and on examination just before he had sent for me, he had found that four or five of the pills he had taken had passed from him, not at all altered by having passed the bowels : when compared with those remaining in the pill-box, they appeared the same, only with a moistened surface :—the too great effect of antimony seemed now to be

explained, and the pills to the eye and taste appeared to contain a large portion of sulphur antimonii præcipitatum. Mr. WELDON's very accurate analysis, which is here subjoined, clearly ascertains the fact of their consisting chiefly of antimony: in the present case they appear to have operated, like the antimonial cup, without losing sensibly of their weight; but when it is considered how various is the state of the fluids in the primæ viæ, and the violent effects which would ensue from the solution of such a quantity of antimony in the bowels, it is hoped that the publication of this analysis will prove a salutary caution against the use of those medicines of which the composition is kept secret.

1. Two pills were macerated in distilled water for twenty-four hours in a tempera-

ture from 100° to 80° ; when put into the water they weighed gr. 7. at the end of the twenty-four hours they had increased in weight gr. 1.2.—They communicated to the water a slight yellow tinge.

2. Gr. 22.4 were rubbed to powder and triturated with an ounce of distilled water, then macerated for twenty-four hours, during which time they were boiled half an hour.—The decoction was of a yellowish color and somewhat opaque; the insoluble residuum weighed when dry gr. 19.2; the liquid afforded an extract of a bitter taste, free from saline matter.

3. Gr. 19.2, the residuum of the former experiment, were infused in half an ounce of spirit of wine for twenty-four hours in a heat of 110° . The tincture became of a deep red color; the dried

residuum weighed gr. 13.7. The tincture evaporated, left a residuum of a deep red color and warm resinous taste.

4. To gr. 13.7, the residuum of the former experiment, were added two drachms of muriatic acid previously diluted with as much distilled water:—Effervescence immediately took place, and a considerable portion of the powder was dissolved; it was then boiled with two successive portions of muriatic acid: a brown insoluble residuum remained, which weighed gr.-.8. this powder heated to redness left a residuum of a grey colour, which weighed gr. -.2.

5. The solution in muriatic acid was boiled to force off the superabundant acid, precipitated by water and filtered, when oxalic acid threw down a small portion of lime.

Six pills weighing gr. 22.4 consisted therefore of

Bitter extract, soluble in water	Gr.	3.2
Resin and coloring matter, soluble in spirit of wine, and tasting like Balsam of Peru }	--	5.5
Oxide of Antimony, with a small portion of Lime	--	12.9
Combustible matter	--	0.6
Silex, apparently	--	0.2
	Gr.	22.4

29. So many instances have occurred of persons having swallowed large portions of sugar of lead with impunity, that several very respectable practitioners have doubted whether colica pictonum can at any time have been induced by any preparation of lead taken into the stomach, and have imputed its effect in producing this disease solely to its action when externally applied: it is however most cer-

tain, that the disease has been induced by lead taken internally :—in many cases of hæmorrhagy I have given cerussa acetata with opium, and I have minuted three of them, in which slight symptoms of colica pictonum appeared ; but no instance has ever occurred to me of any violent attack of the disease from the lead pill : each of the three cases yielded almost immediately to small repeated doses of solid opium and neutral purgative salts. A large proportion of the mildest preparation of lead applied to a sore has sometimes increased pain and inflammation, and a more diluted application of the same preparation has taken off the pain and healed the wound :—on the same principle may be explained that lead dissolved in cyder or other liquors produces colica pictonum ; and that a large quantity of lead taken into the stomach

does not produce any such disease :—in the latter instance probably, the stimulus produced by the solution on the primæ viæ excites sufficient action to procure its own evacuation : it would not be proper to try the experiment, and purgatives are commonly immediately prescribed, and the poison is evacuated. As far as my experience goes, about one in ten of patients, who take the lead pill, feel colica pictonum in its incipient state, and I never prescribe it, without directing the pill of opium and the purging salts to be in readiness for immediate use, or without often seeing my patient, or at least leaving him in the care of those on whom I can depend.

30. As to the Vegetable Poisons, it is impossible in a short treatise even to enumerate them ; let it then suffice to notice the effects of those which are not uncommonly used in medicine : it is impossible

here to canvass the opinions of Mead, of Whytt, and of Fontana, or to decide the question whether opium and other narcotic drugs produce their effect by acting on the nerves, the muscles, or the blood: That opium shews its effect very shortly after it is introduced into the stomach, is sufficiently obvious; that in any dose by taking off the action of the stomach and intestines it tends to check the alvine discharge: that in too small a dose it very commonly produces some symptoms of irritation in the system: that in a well-proportioned dose it induces rest and takes off pain in any part of the body ; and that when taken in any large quantity it produces permanent stupor, which if not speedily relieved terminates in death.

31. *Atropa Belladonna*, *datura stramonium*, *hyoscyamus*, *cicuta*, and some

others, when taken in such a quantity as to prove deleterious, produce effects very similar to those of opium, except that they have not the effect of constipating the bowels, and more commonly produce convulsions; and here it is to be noticed that the hyoscyamus is in many instances a most valuable drug: often, where opium disagrees, it may be given in moderate and repeated doses with the greatest success; and in some instances of continued delirium, under which the patient was sinking, and where opium in any dose has done mischief, I have seen a very small dose of hyoscyamus save the life of a patient by restoring tranquillity: it requires however the strictest care and attention to its dose and repetition: in one case of long continued delirium with constant watching for several days, after in-

flammation of the lungs and membranes of the brain, two doses of half a grain each of extract of hyoscyamus were administered to a young lady, after the second of which she had some tranquil sleep for two hours, and awoke very much calmed :—a third similar dose, which was ready in case of necessity, was inadvertently given, and it almost immediately produced tremors, loss of sight with dilatation of the pupils, for about an hour, and a convulsion fit seemed every instant to be approaching : from this state however she was quickly recovered, and from that moment the delirium ceased and returned no more, and she was rapidly restored to perfect and permanent health.

32. Some vegetable matters, such as elaterium and hellebore, when taken in large quantities, appear to produce their mis-

chievous effects simply by their powerfully purgative qualities; others, as the gall-nut and some of the fungi, by their astrin-gency.

33. The effect of digitalis is different from that of any other vegetable Poison. The violent vomiting and purging it pro-duces are indeed the common effects of other drastic medicines :—but it will some-times increase the secretion of urine much more than any of them :—and its operation in diminishing the frequency and hardness of the pulse is singular :—at the time of its first very general introduction into practice in considerable doses as a medicine in dropsy, I witnessed many instances of its very deleterious effects; either the vomiting, or the stools, or the urine, or two of these secretions, or all three of them, were very

much increased after the repetition of an uncertain number of doses; the hydropic swellings disappeared wholly or in part, and immediately on the absorption of the extravasated fluid the patients appeared in a joyous state of delirium, resembling that of intoxication, with little variation of the pulse, which however sometimes became intermittent:—to this state immediately succeeded that of stupor, the pulse became gradually slower, soon afterwards imperceptible, and death ensued in less than forty-eight hours. It unquestionably appears from reasoning that a medicine, of which the direct effect is to lessen the muscular action of the arterial system, is contra-indicated in dropsy; and for myself, I can truly affirm, that by the exhibition of other medicines, particularly by the

various preparations of squill, by oxymel Colchici, and by the combination of these with mercury, I have exceeded my most sanguine expectations, and have seen drop-sical patients restored to health, which in several instances has been permanent, even where danger was imminent. It has also occurred to my observation that few of those, who have taken digitalis freely, have survived a twelvemonth :—it appears to leave the stomach in an altered state, that after an uncertain period languor and inappetency ensue, but the facts respecting the alteration in the state of the stomach are not sufficiently traced to be stated here : the only reasonable exhibition of digitalis appears to be in cases of permanent increased hardness, as well as frequency of the pulse ; when the mildest form, that of

tincture, should be employed, the smallest effectual doses should be given, the patient should be frequently examined as to the state of his head and stomach, and the medicine should be discontinued for a time, as soon as any ill effect is produced, or as the symptoms, for which it has been exhibited, will allow.

34. Most of the Animal Poisons may here be passed over in silence, as few of them are ever introduced into the stomach, and most of them are digested with impunity :—as to the Poison of shell fish, if there be any such Poison independent of the glary and adhesive texture of the animal itself, which in stomachs habitually or accidentally weak is indigestible, or where they are taken in too large quantity ; it is probably the food of the animal itself

or some mineral poison which it has taken up with its food, and is most likely not to be of an animal nature.

35. Cantharides, in the form of tincture, are sometimes given as a medicine in involuntary discharge of urine and some few other disorders :—and sometimes prove deleterious by vesicating and ulcerating the stomach and intestines, as well as by producing strangury, whether externally or internally used.

36. The affections hitherto described depend wholly or principally on the stomach itself, or on the matters immediately received into it. It will not be necessary to treat upon inflammation of the stomach, as every thing respecting it has been sufficiently discussed by every writer who has treated generally on inflammations, nor to give an account of the appearances in the

different organic affections of the stomach, these appearances having been well arranged and clearly stated in a deservedly popular work ⁱ. The diseases now to be described appear to be complicated affections of the intestines or other viscera with that of the stomach.

ⁱ Dr. Baillie's *Morbid Anatomy*, second Edition,
p. 137.

CHAPTER V.

ON THE STATE OF THE STOMACH AND
ABDOMINAL VISCERA AFTER RESIDENCE
IN HOT CLIMATES.

37. THE diseases of the Stomach, which are complicated with a torpid or irregular action of the intestines, and of the liver and other parts intimately connected with the chylopoetic viscera, are very much varied. It is undeniable that a regular secretion of bile is essentially necessary to the proper action of the intestines, and that the deficiency of this fluid is the most common cause of constipation, which in itself, when it has once become habitual, is productive of very serious consequences :—

unless perseverance be used in the application of proper means for the relief of costiveness, the hepatic system cannot regain the power of performing its functions with regularity, but either a proper quantity of bile is not secreted, or, when it is secreted, a very small portion of it reaches the duodenum, and it remains lodged in the pori biliarii, gall-ducts, and gall-bladder, producing general languor, pain and sense of weight in the part, and sometimes gall-stones, or jaundice without any such concretion, while the stomach and intestines suffer severely from every dyspeptic symptom, arising principally from the scanty supply of this fluid so essentially necessary to digestion. Sometimes it happens in this state of the liver, that the bile is occasionally poured out in large quantity into the intestine, producing violent tem-

porary diarrhea, and part of it being regurgitated into the stomach, violent vomitings of bile ensue, which greatly debilitate the patient and destroy the energies both of his stomach and his constitution.

38. Increased circulation from the heated atmosphere is confessedly the principal exciting cause of the increased action of the hepatic system which is perpetually taking place in hot climates:—but the consequences of such excitement, which are more particularly to be observed in this country, on the return of those who have been long in the East or West-Indies, are commonly such as have been just pointed out:—for the most part the liver is disposed to a state of torpor, the consequence of the great excitement it has previously sustained, and commonly, from various accidental causes, its excitement

so as to disturb the general health, and more particularly to derange the process of digestion, returns at different periods :— the powers of the stomach itself have been very considerably impaired by the share which it has borne of the original attacks, and are repeatedly injured by the repeated attacks which it suffers in common with the liver, as well as from the customary deficiency of bile, and from that fluid being occasionally poured out in increased quantity. Persons on their return to Europe from the East or West Indies are for the most part disposed to costiveness or to irregular alternations of costiveness with diarrhea :—sometimes indeed their complaints are complicated with dysentery, the discussion of which would lead too far from the present purpose, but even in this complication, it is perfectly understood that

the frequent slimy alvine discharges are compatible with a real costive state of the bowels. How very important a strict attention to the state of the stomach and bowels is to East and West Indians will appear from what is to be said in the third part of this treatise on the treatment of their complaints, and that it is of great importance to them not only occasionally to employ a purgative medicine, but also, what be the purgative selected, and in what manner it is exhibited.

39. The spasmodic pains about the epigastrium and hypochondria which occur in this state of the stomach and the liver, often are wearying to the greatest degree, the flatulence and sense of sinking and inanition at the stomach are very distressing :—the general languor and depression

are to the patient intolerable and insuperable, if he indulges in activity he sinks into a state of increasing debility, and if he attempts any moderate exertion he is overcome by fatigue, or suffers from cold, or from some new symptoms, the consequences of accidentally increased action ; and unless some effectual, but moderate and permanent means of relief, be afforded, he dies of some symptomatic disease which ensues, or sinks exhausted by the primary affection of the stomach and other viscera concerned in digestion : such are the most striking features of disease originating from this state of the abdominal viscera, when it is severe and permanent :—in the more common attacks a great number of symptoms are very troublesome : nausea, cardialgia, eructation, faintness, sense of weight

and oppression, vomiting, head-ach, and giddiness frequently occur, the mouth becomes parched and the tongue very variably furred : the pulse commonly is small and frequent, the countenance wan and sallow, and the skin dry and irritable with occasional clammy perspiration ; the urine is high coloured and loaded with mucous matter, sometimes varying to a very pale color with little or no mucous appearance : the fæces frequently resemble clay or ashes in their color, and have every variety of appearance except that which indicates health :—some of these symptoms are sometimes explained by the appearance of bile in the system, or by that of hæmorrhagy from the primæ viæ, though they commonly occur without any such appearance : when the liver is much affected there is commonly pain and uneasiness in its re-

gion, which is tender to the touch, and pain between the shoulders. In almost every case, the appetite is exceedingly fastidious; if food be not taken, flatulency and sense of languor increase, and the spasm becomes severe; and after eating all the symptoms of dyspepsia occur and the pain very often is aggravated.

40. Those who, during their residence in a hot climate, have been attacked by acute inflammation of the liver, not terminating in suppuration, are frequently found on their return to Europe, to have the liver enlarged from the deposition of coagulable lymph in the progress of the inflammation, and in its termination by resolution, in the same manner as the testicle, and particularly the epididymis remains for a long time enlarged after the inflammation called hernia humoralis:—it is seldom however

that this affection of the liver terminates in true schirrus, but like the epididymis in the state here mentioned, by time and management the liver is restored to a healthy state :—the genuine schirrus, it is true, sometimes takes place in East and West Indians, but does not particularly attach to them from the effects of climate, or other circumstances necessarily connected with their mode of life :—when it occurs in these patients, it is of the same nature and requires the same treatment as a schirrous liver in other cases, which will come under consideration in the following chapter.

41. The adventitious causes of these affections of the stomach and abdominal viscera, which concur with the effects of climate in producing the disease and keep-

ing it up, are so intimately connected with the prophylactic method of cure, that they will be sufficiently explained in what is to be said respecting the treatment of these complaints.

CHAPTER VI.

ON THE STATE OF THE STOMACH AND
ABDOMINAL VISCERA, PRODUCED BY
HARD DRINKING.

42. THE causes and symptoms of schirrous liver have so often been explained, and are so generally understood, that it will not be useful minutely to state them here :—it has always appeared to me that the explanation given of the schirrous liver as depending on sympathy with the stomach, or on slow inflammation consequent on altered action of the vena portarum and hepatic artery, is very insufficient to illustrate the subject, and it was intended here to consider how far the

very numerous absorbent vessels of the liver might become primarily affected in this disease, but since the absorption of mercury in the treatment of it, will now be more particularly discussed ; what is to be said on the absorbents is reserved for that place.

43. The state of the abdominal viscera from hard drinking might have been very properly introduced as dependent on the action of alkohol on the stomach itself ; but the liver is always much affected, so as in a great measure to have made practitioners overlook the mischief sustained by the stomach, which in dram-drinkers suffers severely : the loss of appetite, nausea and vomiting when the stomach is empty, and the pain at the pit of the stomach, may be principally referred to the stomach itself, which from this pernicious

custom, has often been found with a smooth glass-like surface internally, the extremities of the vessels in the villous membrane having been abraded or absorbed in consequence of the repeated irritation of the stimuli to which they have been imprudently exposed: the trembling from the affection of the whole nervous system, and frequent fainting-fits which ensue, seem also to depend upon the stomach, excepting as far as they are connected with vertigo, which probably depends on the interruption to circulation through the liver, and to similar affection of the spleen and pancreas.

CHAPTER VII.

ON PYROSIS, OR SODA.

44. THE Pyrosis or Soda, in which disease pain with burning heat is felt at the pit of the stomach, and watery fluid almost imperceptibly passes upwards in considerable quantity, has been considered as a specific disease of the stomach: it appears however to depend upon the contrary state of the chylopoetic viscera to that which is consequent upon free living: there is commonly torpor of the intestines in this complaint, owing probably to the inert state of the liver, though sometimes the watery fluid passes downwards as well as upwards; it is probable that the secre-

tions afforded both by the liver and the pancreas, are in a more diluted state than is natural, and that these viscera, as well as the follicles of the stomach itself, furnish a proportion of the watery fluid : this affection of the pancreas is probable, from its similarity to the salivary glands, which are evidently affected in this disease to a considerable degree ; and the deficiency of bile is in a great measure proved by the treatment to be mentioned hereafter, by which the disease is cured, and by the cardialgia which frequently is connected with it, and is so often found to depend on the want of the alkaline matter of the bile. The disease is common in cold climates, where the people are not supplied with plenty of substantial nourishment : during a twelve-month in Edinburgh, I saw several instances of it ; have had some

genuine cases of it in the neighbourhood of London, and have at this time a case of it under my care in this city. To some pregnant women this disease is particularly troublesome, and in them it probably in a great measure depends on the torpor induced in the abdominal viscera by the increased bulk of the uterus: but many cases, which have been stated as of this disease in pregnancy, might more properly have been considered as cases of cardialgia; the matter brought up from the stomach having been acid, and commonly evacuated by the direct effort of vomiting, and unaccompanied with the increased flow of saliva which appears to be characteristic of the genuine disease.

CHAPTER VIII.

HÆMORRHAGY FROM THE STOMACH AND
MELÆNA.

45. CHOLERA, and the other effects of bile in increased quantity, being generally understood, hæmorrhagy from the stomach and melæna are next to be considered.— Such hæmorrhagy may be produced by general fulness of the blood-vessels, by obstructions of the neighbouring viscera, or simply by the increased action of the vessels pouring out the blood : it is not uncommon in women, whose blood-vessels are full, and whose catamenia are deficient, or soon after the cessation of this

periodical discharge, when proper care of the health at that time of life has been neglected; it happens also sometimes from the suppression of other hæmorrhages to which the body has been accustomed; thus vomiting of blood occurs sometimes after hæmorrhoids: and it will sometimes be produced by the violent action of vomiting.

46. In compliment to the antients, the appearance of black bile is sometimes allowed; and certainly from acids and other causes producing change in the bile, it appears of a very dark hue: it has long since however been satisfactorily explained that the perfectly black powder in a thin fluid, which passes by vomiting and purging in Melæna, consists of globules of blood broken down and discolored:—it

is remarkable that Professor Portal^k should have complained a very short time since, that all former Physiologists had advanced without proof, that this black matter is true blood:—Medicine, as he says, not having been enlightened by Anatomy. The justly celebrated Hoffman^l in his large work first published in 1728, places this fact in a very clear point of view: he states that on dissection of persons who died of this disease, he has frequently found the mesaraic vessels much distended with black blood, and the stomach at the same time stuffed with it; and he accounts

^k Sur la Nature et sur le traitement du Melena. Mémoires de la Société médicale d'Emulation séante à l'Ecole de Médecine de Paris.—Seconde Année, 8vo. Paris. An. vii. 1799.

^l Hoffmanni Medicina rationalis systematica. Tom. 4. Pars. 2. Sec. 1. Cap. 3.—De Vomitū cruento sine et cum sècessu nigro sive Morbo nigro Hippocratis.

for the great depression of strength, which always accompanies the disease, from the process of putrefaction taking place in the effused blood and the consequent appearance of this extremely foetid black matter: He states the case of a young man who became of a livid and leaden complexion after having been cured of a long quartan ague by an empiric, who complained of much flatulency, pain in the left side, and costiveness; on a sudden after exercise and a quarrel with his companions, copious and repeated black vomiting came on with its usual symptoms, and death ensued in twenty-four hours:—on dissection the next day, the stench was intolerable, the vasa brevia were remarkably black, and ruptured; the vessels of the ileum were black, and black foetid fluid was found in the stomach and ileum:

The liver was somewhat hardened, and the outer surface of the spleen so hard as to resemble cartilage. The next case he relates, is that of a woman of sixty, who passed a large quantity of black matter by vomiting and stool; the returns of which were accompanied with fainting fits: She died at the end of a fortnight, when the vasa brevia were found tumid and filled with black blood, and abundance of black blood in the ileum; the liver was enlarged and much hardened, the spleen of twice its natural size, and so soft that it was broken by the touch of the finger, and poured out a quantity of foetid black blood. A third dissection given by Hoffman, is that of a child one month old, who for three days had passed matter as black as pitch by stool, which he found to have proceeded both from the stomach and the

intestines, as some such matter was found in them, and the vessels were still tinged with black blood.—^m Hoffman also in a separate Treatise first published in 1729, with much sagacity illustrates the causes of blood being poured into the stomach, and the various sources from which it is derived:—Morgagni ⁿ has recorded some cases which tend to prove the same facts with the dissections given by Hoffman:—yet he seems to doubt whether the black matter could proceed immediately from the blood; and explains the cases of Hoffman, certainly very justly, as not having proved mortal, or having occasioned the great depression of strength which occurred, from the quantity of blood poured

^m De Vomitū cruento.—Thes. 5. 6.—Hoffmanni Operum Suppl. 2. Pars. 2. pag. 97. fol. Genevæ, 1753.

ⁿ De sedibus et causis Morborum Epist. 30. Art. 17.

out, but by the putrefaction of the blood having affected the nervous system.— These authors have been quoted to shew the fallacy of Dr. Portal's statement, who however has made some interesting anatomical reports, which are very similar to those above-mentioned :—he gives a case in which bitter and yellow matter was vomited, and also matter that was black and insipid, and some that was grey and glutinous :—the first of these dissolved in water and tinged it yellow ; the greater part of the glary fluid dissolved in hot water ; the black matter floated on water, in boiling water it disappeared, and the fluid became of a reddish tint, and on cooling some of the black matter, again floated ; and this he very fairly concludes to have been blood. He ventures an opinion, which seems evidently to have ori-

ginated from some conjecture as to the balance of the circulation, and which he thinks is verified by anatomical investigation, that an indurated spleen produces enlargement of the liver; and that the liver, when schirrous, causes increased circulation and size in the spleen: in one case, he describes the gastric branch of the cœliac artery to have been very much enlarged, and the other branches smaller than usual in diameter; in this case he found a spoonful of black matter in the stomach, and more of the same was squeezed out by pressure on its parietes; the liver was large and soft, and the large branches of the vena portarum tumid; the spleen small, the pancreas large, and both of them indurated.

47. The complaint is commonly preceded by flatulence with eructation and a

pungent tense pain about the epigastrium and hypochondria, according to the seat of the disease in each individual case ; much anxiety and sense of pressure ensue, with an extraordinary languor and depression of strength, and sometimes with fainting fits.—Hoffman distinguishes this disease from inflammation of the stomach, by the heat about the præcordia, thirst, fever, and contracted weak and frequent pulse, which attend the latter disease : The fever, the pulse, the ineffectual efforts to vomit, or different appearance of the matter vomited, and the very violent and unremitting pain ; form the best diagnosis in inflammation of the stomach : much sense of heat about the præcordia, and thirst often precede and accompany Melæna :—The pulse is sometimes small, seldom frequent, and more commonly full, and at the same time

weak : the general heat of the system is very seldom increased ; the tongue often is black, and it is probable that some of the black broken down blood is absorbed, and give the appearance of what is called black jaundice. In cases of recent hæmorrhagy from the stomach, the pulse and heat of the body are commonly increased with the common febrile symptoms.

CHAPTER IX.

HYPOCHONDRIASIS AND SICK HEAD-ACH.

48. THE accurate, elegant, and ingenius Aretæus, in his chapter^o, on affections of the stomach, expresses himself to the following effect.

The stomach is the great cause of pleasantness and of disquiet ;—when its action is perfect, firmness and elasticity of fibre, and a ruddy complexion indicate health, and the digestion is easy :—the contrary happens when the stomach is disquieted, then there is aversion to food, not only

^o De causis et signis ducturnorum morborum Lib. 2.
cap. 6.

when it is placed on the table, but to the very thought of it, and dejection of mind is the consequence of insufficient nourishment ;—nausea, anxiety, collections of fluid in the stomach, and cardialgia ensue, and sometimes increased flow of saliva and vomiting ; though the whole body suffers while the stomach remains empty, yet greater suffering is produced when necessity has required food to be taken, and it is masticated with aversion and swallowed with still greater disgust, and pain more intolerable than hunger ensues, and the pain between the shoulders increases ;—dimness of sight, tingling of the ears, and heaviness of the head take place, with torpor of the limbs, feebleness of the extremities, and sensations of palpitation about the præcordia ; patients feel themselves agitated and as it were driven to and

fro' like reeds or trees by a gust of wind ; they are sleepless, though heavy and ready to fall asleep in a state resembling coma ; they are meagre, pale, languid, deprived of strength, inactive, inanimate and indolent, but they are suddenly excited to anger :—their situation much resembles that of Melancholia, with which disease they frequently become affected.

Aretæus goes on to state the causes of the affection he has described :—it attacks those, he says, who from necessity have lived on thin and spare diet, and those of laborious and patient erudition, who are so absorbed in the precepts and practice of philosophy as to hold in contempt a plenty and variety of nourishment ; they never change the scene, or take exercise, or indulge in any relaxation of mind ; their love of learning detaches them from every

other consideration, from their country, their parents, their kindred, from themselves, for the whole of their lives ; their whole frame becomes tabid ; pale and wan in youth, they have all the infirmities of age ; their minds, from being incessantly exerted in deep thought and meditation, become fickle and enervated :—their severity of temper prohibits any indulgence in cheerfulness, and laughter and mirth are strangers to them.

49. This is but an indifferent copy of the admirable picture drawn by Aretæus, which is imitated only so far as it represents hypochondriasis, and has any resemblance to the present times. It is to be observed that though debility of the stomach is the consequence of poor feeding from necessity, and may sometimes induce hypochondriasis, yet this very rarely hap-

pens : it certainly however happens to hypochondriacs to have their complaints aggravated from want of regular meals, and many persons fall into this disease in a great measure from never thinking of taking any sustenance till their very late hour of dinner ; and when the disease has prevailed for some time, they frequently form rules of diet for themselves, or derive them from the advice of all whom they may have occasionally consulted, and they very commonly attend more to the cautions they have received against the laedentia than to any encouragement as to the juvantia ; they depend for restitution of health on avoiding all that has been pointed out to them as wrong, and will scarcely believe that much benefit is to be derived from a good light meal or from taking at intervals any small quantity of nourish-

ment; they will look at food for a length of time, and much longer at any medicine, till their appetite ceases for the one, and if they smile for once, it is at their conviction of the impossibility of their deriving any advantage from the other.

50. The symptoms attending hypochondriasis are exceedingly varied, sometimes almost all of those mentioned (18) and many of those (37) appear: the most constant and remarkable are the continued acidity of stomach (17) with affection of the head and constipation:—these symptoms are common to hypochondriasis and that species of stomach disease which is commonly known by the name of sick-head-ach, and on this account these two diseases are here placed in one point of view:—the prevalent acidity is found to be the principal cause of the affection of

the head, and is at times both the effect and the cause of the costive and irregular state of the bowels which is familiar to such invalids. The affection of the mind in hypochondriasis is curable, or may be very much palliated by due care and attention to the digestive process;—persons thus affected are always disposed to view only the gloomy side of objects:—according to the different circumstances and situations in life of each individual, he becomes oppressed with the fear of disease, of poverty, of death, of fatuity, of loss of memory, or has any other groundless fear of misery awaiting him;—such paroxysms will sometimes occur several times every day, and are often found to depend on indigestion and flatulency, which being removed by the means to be pointed out in the plan of treatment, these ideas of ap-

prehension subside for a time, but occur again as soon as the dyspeptic symptoms again exist. It is not denied that hypochondriasis and that species of insanity called melancholia are in many instances intimately connected, and in some instances that the mind produces the affection of the stomach :—but melancholia sometimes exists without any such affection of the stomach, where the appetite is good and the digestion perfect.

51. Further confusion as to the character of disease has been introduced by the name of Hysteria, and the apparent absurdity of stating men to be affected with it :—now the globus hystericus and disposition to hysterical spasm indisputably sometimes occur in men ;—this is not a place for entering into the proofs, which however are very strong, that hysteria in both sexes

depends on the state of the genital system, and is often unconnected with any affection of the stomach, such as is essential to the nature of hypochondriasis;—which latter disease also sometimes, though less commonly, exists in the female sex; is in them also an original affection of the digesting viscera and unaccompanied by the smallest resemblance of hysteria. The description of *clavus hystericus* given by Sydenham is most excellent^p. “Spiritus ab omni “corporis ambitu, in certo pericranii quasi “punctulo, concentrantur, dolorem haud “minus perterebrantem, quam si clavus “ferreus in caput vi adigeretur, accer-“sentes, unà cum insigni materiæ viridis “evomitione.”—and again, “non multum “abludit ab istâ radiorum solis collectione “quæ fit ope vitri incensorii: utque hi

^p Sydenham *Dissertatio Epistolaris.*

“ vi unitâ exurunt, ita et isti ob eandem
“ rationem dolorem infligunt, membranas
“ quasi diserpentes lacerantesque junctis
“ viribus.”—his expression ‘materiæ viridis
‘ evomitio,’ points out the presence of acid
matter in the stomach, and if he had called
the symptom clavus dyspepticus he would
have been more correct :—it is further to
be observed that the pain is frequently felt
in the substance of the brain itself, and
commonly in the extremities of the nerves
of the integuments, sometimes however it
is so severe as also to give the sense of
perforation he describes through the peri-
cranium, skull, and all the membranes :—
in another part of the same essay he states
this symptom to be particularly distressing
to chlorotic patients ;—and undoubtedly
the combination of chlorosis with the clavus
hystericus of Sydenham, or more properly

the sick-head-ach, perpetually occurs:— the depraved appetite in chlorosis, which is such as in itself to indicate the presence of superabundant acid in the stomach, proves that there is great derangement of the primæ viæ, but, both from the natural and artificial cure of this disease, there is the best reason to suppose that it principally depends on affection of the most important parts of the organs of generation, and more particularly from its frequently affecting young widows, even those who have borne children, and in whom therefore the sexual organs have been fully evolved into action; that a state of debility in these organs may be attended with faulty action and secretion in the stomach and intestines, is continually to be observed, but it would be assuming too much to say that chlorosis, which attacks young women more parti-

cularly at a time when the most important change in their sexual organs is taking place, depends originally on the stomach and intestinal affection ;—this however has been lately suggested from a very respectable quarter.⁴ Now it never can be admitted that the vomiting, the costiveness, and the pains resembling colic, which almost invariably attend nephritic cases, are original affections of the stomach or intestines, yet this appears as reasonable as to suppose the same of chlorosis.

52. In all pathological reasoning it is of the greatest importance to attend to the state of the stomach, and to use all our sagacity to discover how far it is primarily affected, and how far its action is deranged by its sympathy, which is fully known to

⁴ Observations on purgative medicines, by James Hamilton, M. D. Edinburgh, 1805.—p. 102.

take place in all diseases of every kind, though it has not always been duly considered in practice:—for where the affection of the stomach is sympathetic, there is another disease to be removed before the functions of this organ can be perfectly restored.

From practical observation it appears,—

That melancholia may in a great measure depend upon original affection of the viscera concerned in digestion, that it may exist with none or little affection of these viscera, and sometimes that it may produce such affection :—

That hysteria is a disease not necessarily, and sometimes not at all, connected with such affection :—

That chlorosis is commonly attended with affection of these viscera, from the inactive debility of the sexual and of the general system :—

That hypochondriasis is most commonly an original affection of the digesting organs :—and

That the sick-head-ach also very commonly depends on primary affection of these viscera, though it often appears as a symptom of other diseases of debility, which diseases are much aggravated by the want of energy in the stomach which ensues.

CHAPTER X.

PAIN OF THE STOMACH, FLATULENCY,
TYMPANITES, CARDIALGIA, AND SOME
OTHER ANOMALOUS SYMPTOMS.

53. IT is almost impossible to point out all the various causes of pain in the stomach, as arising either from its own affections, or from almost innumerable sympathies with every part of the body :—affections of the liver, gall-ducts, pancreas, spleen, and intestines produce pain at the stomach, as well from deranging the digestion, as from the sympathy induced :—and it is also produced from more remote connection with the genital system, lungs, heart, skin, and every other part :—it often

comes on with the nausea and vomiting in affections of the head and kidneys, and is symptomatic of febrile affection :—the appearance of pain at the stomach from most of these causes has already been noticed in some of the preceding chapters :—it is generally to be observed that where the pain at the stomach is merely sympathetic, it is less constant, and less affected by aliment or medicine taken into the stomach, than when it is a primary affection :—but the sympathetic pain commonly soon deranges the digestion, and this diagnosis becomes less certain.

54. The kind of pain which ensues from inflammation of the stomach and that from hæmorrhagy and melæna have been already noticed (47). The pain from ulceration and from cancerous affection is aggravated when the stomach is called into

action ;—in the former case for a considerable time after eating ;—in cancer and schirrus for the most part, but not always, there is lancinating pain peculiar to this kind of disease ;—both in these affections and in ulceration, and in all organic diseases of the stomach, the pain is always aggravated precisely in the same spot on any stimulus being applied to the stomach. Morgagni^r has given a remarkable case of ulceration of the stomach occurring with ovarian disease, and there is good reason to suppose such complication to be not uncommon.

55. The sympathetic pain in the stomach from uterine affection is particularly striking ;—many delicate women suffer from it when their periodical discharge is approaching, and in chlorosis (51). In pul-

^r De sedibus et causis, 29. 14.

monary consumption, the sense of pain and sinking at the stomach is sometimes very remarkable. The sudden attacks on the stomach in gout and rheumatism, particularly those of gout, are not only objects of immediate and accurate inquiry and attention, but it is the duty of a physician to foresee, and, if possible, to prevent them, by preparing for his patient the means of obviating them, to be ready on the slightest symptom of attack :—the sensations about the stomach in gout frequently make people pray for a regular fit, which however scarcely gives temporary relief and leaves them in an increased state of debility of the stomach ;—in dissections of patients who have died with gout in the stomach, an appearance of erysipelatous inflammation has been found on its internal surface: in rheumatism the attacks on the stomach

last longer and are not so immediately dangerous, and are attended with more copious vomiting :—when there are frequent paroxysms of pain in the stomach it is often requisite to inquire whether the patient be of rheumatic habit, as this kind of pain has sometimes been taken for organic affection, when it has proved to be true rheumatic disease and has afterwards been relieved by, and has alternated with, rheumatism in the extremities.

56. The pain in flatulency is distinguished by its sudden attack, and as sudden cessation, when the aeriform fluid is expelled :—it will sometimes depend on the most simple causes, and sometimes, as in gout and rheumatism, is the forerunner of formidable attacks of violent disease in the stomach :—sometimes vapor will be forced out of the stomach into the œsophagus,

the muscular fibres of which contracting above, the vapor is retained between the contracting part and the cardia, giving great pain :—if this should happen at the time of swallowing, when naturally the cardia relaxes to admit the food propelled by the oesophagus, the resistance made, by the air below, to the descent of the food, adds very much to the intensity of the pain :—this symptom is not unfrequent in gouty people. Flatulency will sometimes prevail so as to distend the whole of the intestinal canal and to produce tympanites, in which disease there is great uneasiness and dejection, but seldom much violence of pain :—the pain in flatulency is known to depend on the contraction of the muscular fibres on the contained vapor, and the freedom from pain in tympanites seems evidently owing to the want of power to

contract in these muscular fibres, and this want of their contraction is for the most part essential to form tympanites.

57. Cardialgia is in itself a very significant and well-applied name, as it is well known to be the passing of an acrid fluid or vapour from the stomach through its upper orifice: but from the mistaken, though very literal, rendering of this name into English, much confusion has arisen both to the patient and the practitioner: the heart-burn however is a term very generally used and commonly understood by those who have long been subject to it, and particularly by country farmers and their men, who frequently are plagued with it after copious draughts of ale or other fermented liquor to allay their thirst while they are exposed to the powerful rays of the scorching sun in hay-time and

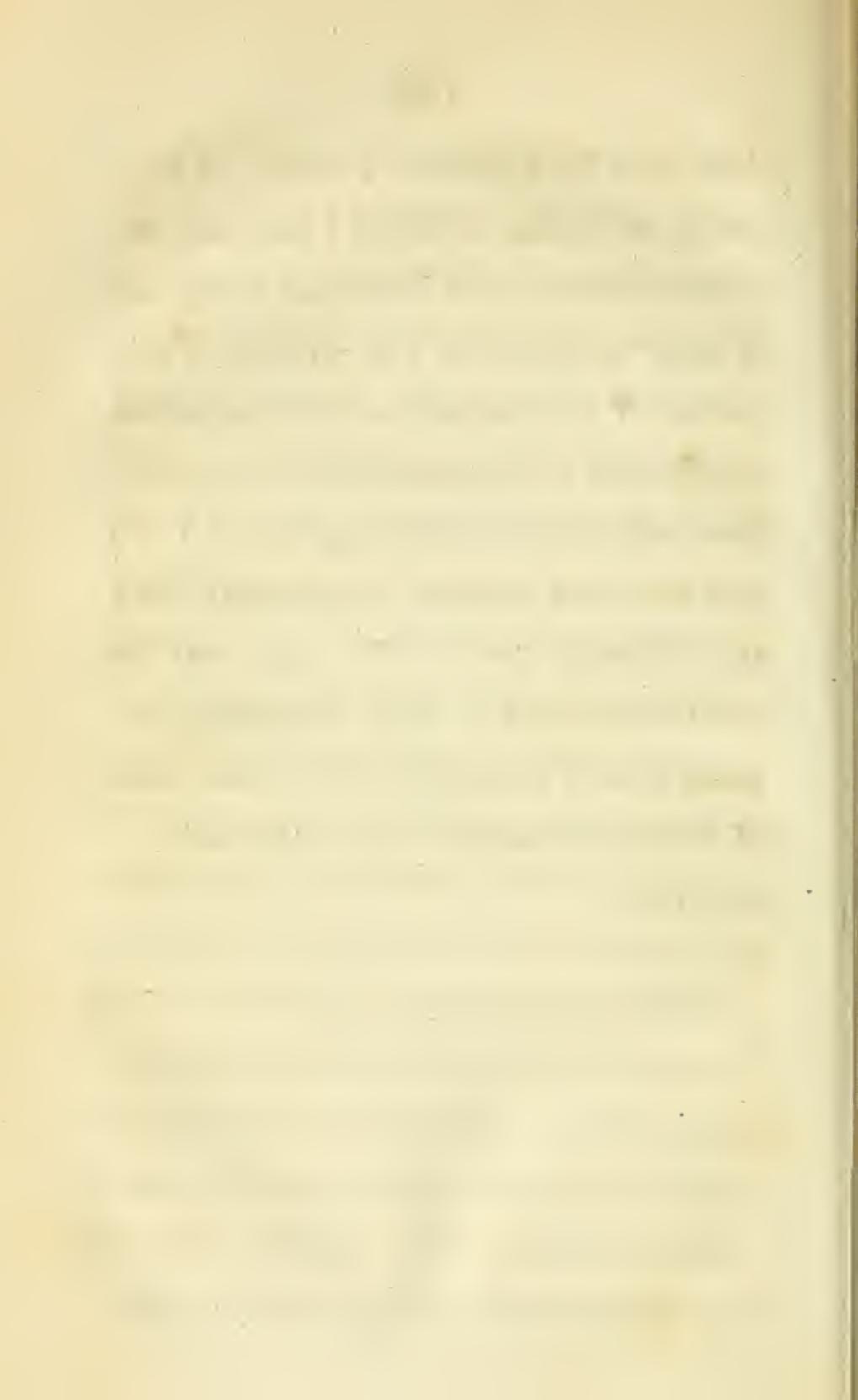
harvest: this appears to be the most simple form of cardialgia, as depending on the spontaneous change of the ingesta in the stomach, which sustains a temporary derangement from long exposure of the body to heat and fatigue; and in this stout and healthy race of men, it seldom requires any medical attention, they commonly chew horse-beans or some other unfermented farinaceous matter, and thus by taking solid matter, which is not disposed quickly to run into fermentation, the powers of the digesting viscera are renewed and the heart-burn ceases:—a very similar instance of heart-burn frequently appears in women who give suck; their appetite is increased by their having afforded a large quantity of nourishment to their infants; it is highly necessary that this appetite should be indulged, and

cardialgia often ensues from mere repletion; sometimes however, where the infant is strong and the nurse weak, this symptom occurs, attended with pungent and permanent pain: In pregnant women the cardialgia and other symptoms of stomach-affection depend on the irritability and sympathy peculiar to that state, as well as in the latter stages, on the pressure of the increased bulk of the uterus:—this with what has been said in former chapters respecting cardialgia will be sufficient, it would be but loss of time to enter more at large on the subject, or to investigate minutely in this Treatise, all the very various causes of nausea, vomiting, hic-cough and other dyspeptic symptoms, nor will the intended limits allow of entering minutely into an account of worms in the stomach and primæ viæ: it is to be

observed that discrimination is requisite between cases of worms and of marasmus, since in both of these there is increased appetite and impaired digestion : in cases of worms however the digestion is often greatly increased for weeks or months at a time to supply nourishment for these parasites.

58. It would be useless, and impossible in a work of this kind, to give an account of all the sympathies of various parts of the body with the stomach, which can be learned only by clinical attendance : the sympathy of the skin with the stomach is very remarkable : Pustules about the lips almost invariably depend on irregularities in digestion, and the nettle-rash frequently comes on from sudden attacks of cardialgia, and subsides with it :—this rash is often brought on by viscous indigestible

food, and by vegetable poisons; as by a course of cicuta, of which I have seen several instances, and in almost every case it may be traced to the presence of acid matter in the stomach.—The sympathies of the head with the stomach have already been sufficiently noticed (25. 50. 51.) To give one more instance of sympathy with the stomach, that of the lungs may be mentioned; thus a cough frequently depends upon a foul stomach, and paroxysms of asthma frequently recur from faults in digestion.



PART III.

TREATMENT OF DISEASES.

CHAPTER I.

EMETICS.

59. A BRIEF statement having been made of the appearances in the principal complaints of the stomach, it remains now to consider their treatment. The very common and capricious use of emetics has proved a most pernicious error, which has prevailed in every age of medicine; their action therefore, and how far the exhibition of them may be right or wrong, are circumstances which are here worthy

of particular attention.—The authority for their free and repeated use is certainly very antient;—Hippocrates ^{*} advises them to be given two or three times in a month in winter, and every fourth day in the beginning of spring, but none in summer unless certain symptoms should occur; and he prescribed them at any season for the slightest deviations from health:—now, since the presence of black bile is so frequently mentioned by the antients, it is reasonable to suppose that they sometimes found some black fluid, which passed upwards or downwards from the primæ viæ, and that this discolored appearance justified their appellation of it; and it is highly probable that the repeated exhibition of white hellebore and other medicines producing violent vomiting, might lacerate

^{*} De Diæta. iii. 4. 7. 9.

the villous membrane of the stomach and intestines so as to produce hæmorrhagy, in which case the blood poured out, woud, as has been explained, assume a black appearance.—However this might be, the practice of freely exhibiting emetics is now very justly and very generally abandoned by those who alone are worthy to be entrusted with the care of health, who have formed their minds, by previous education, to thinking, observation and reflection; who have accurately studied the nature of the human body; and who have sacrificed a large portion of their youth to watching the effect of medicine as administered to very numerous patients in large hospitals. But, unfortunately for the public, emetics and all manner of poisons are given with freedom by the less informed members of the medical profes-

sion, and when a physician in consultation states the objections to such violent practice, and hopes he has done a public benefit by having convinced the person he has met of the mischief he has been doing, he soon finds, probably on the next consultation, that his advice has been forgotten, and is probably told that he has more faith in medicine than the party whose practice he censures: this is commonly the language of ignorance, and is too much used by those, who are determined to exercise a right of prescription, and who are incapable of appreciating the moderate action of moderate medicines, or of observing the baneful effects of the strong drugs they have exhibited, even though perpetual nausea through a long fever be the consequence of the vomits they have given in that disease, or though

constant head-ach and stupor be the result of their injudicious administration of opium; they feel themselves abundantly gratified in having convinced their patient by his sufferings, when under the influence of their violent medicine, that they know how to give that which is capable of doing something, and regarding all medicines as trash, they can never be convinced of the incalculable injury he has sustained: thus the sagacious and discerning physician, when at length he is consulted, has often to contend with more foes than one, with the disease of the patient, and which is sometimes the most formidable of the two, with the effects of the mal-practice that has been instituted.

60. The immediate effect of an emetic taken into the stomach is to increase the secretion from that viscus and from all

the neighboring glands, and to excite contraction in the muscular fibres of the stomach and small intestines in the inverted order of the peristaltic motion ; hence the contents of the upper part of the small intestines pass upwards to the stomach, and, from the increased flow of bile and pancreatic juice produced by the medicine, the stomach becomes loaded with these fluids, which, from their stimulus on a part they ought not to reach, increase the efforts to vomit :—and it appears further that the attachment of the villous membrane is injured by the contractions (6) of the stomach, when violent and compleat, and more particularly when such violent contractions are made to alternate with great distentions from large draughts of fluid being given, in the intervals of vomiting, to increase the emetic effect.

61. In sea-sickness, vertigo first takes place, and then nausea and vomiting aer produced from the sympathy of the stomach with the brain: the vertigo is the first effect of the motion of the ship and of the waves: and is sometimes produced and is also followed with the same kind of vomiting, in persons who look on the waves from the shore, or who look down from any height, or ride in a carriage:—at sea however or close to the sea-shore, there appears to be a great additional cause of the sickness which comes on; the constant great evaporation which is taking place from the surface of the water, produces very considerable coldness on the surface of the human body, when exposed in such a situation, and hence all the internal secretions are increased, and more particularly those of the liver, and

all the glands connected with the stomach, the ducts from which form an easy outlet, owing to their having been just emptied by the vomiting, which had first been the consequence of vertigo. It is a common observation at sea, that persons become exceedingly hungry as soon as sea-sickness has ceased, and well they may, since it is to be considered that the loss of nourishing matter from the blood-vessels in the increased secretion of bile and other fluids evacuated by vomiting is immense :—But, that sea-sickness increases the powers of digestion can in no shape be allowed, except as far as the person seized with it might before stand in need of evacuation for the improvement of his health ; on the contrary it is found that persons accustomed to a sea-faring life, and who suffer from sea-sick-

sickness on each new voyage they make (and some such there are) have most frequently very debilitated stomachs ; and, if this were not the case, the effects of sea-sickness would by no means justify the repeated use of emetics, by any analogical reasoning on the effects produced, for in sea-sickness there is no acrid drug or chemical preparation vellicating the stomach to contract in inverted peristaltic motion and in vain efforts to vomit when nothing is contained in it, but the vomiting ceases with the cessation of the vertigo and increased secretion.

62. A fallacy has taken place in two ways, as to the supposed benefit derived from emetics :—when too much, or improper food has been taken, a spontaneous vomiting coming on, often relieves the patient; but it does not at all follow, that in

every case of slight accumulation, an emetic ought to be given, and much less should it be frequently repeated :—a mild purgative commonly answers the purpose better, without inverting unnecessarily the direction of the action of the stomach. The other fallacy is, that from the violent operation, especially of antimonial emetics, much bile is often thrown up, which often has satisfied the practitioner that great good has been done, and has become an encouragement to the repetition of them from time to time to get rid of the load of bile, whereas the stimulus of the emetic in truth has occasioned the secretion of it, as is proved by the quantity being greater than the gall-bladder and biliary ducts could by possibility contain. The effects stated (60), which must be produced by emetics, should always be duly considered

before an emetic medicine is given, and it is further to be observed that the certain consequences of their frequent repetition are the increased irritability of the stomach, and habitual inversion of the peristaltic motion :—the pylorus, from being frequently made to allow the passage upwards of intestinal fluids, becomes habitually disposed to dilatation, and allows the bile and other fluids frequently to pass into the stomach, which never fail to injure the digestion, and very commonly produce vomiting :—and it is not uncommon to meet with persons who have frequent sick-head-achs or even fall into hypochondriasis, principally from their stomachs having been torn to pieces by repeated emetics.

63. When any substance containing poisonous matter has been swallowed, and in

some other cases as will be mentioned presently, it is however requisite to administer emetics, and, when they are necessary, it is incumbent on the practitioner to give such forms of medicine as not to commit more violence on the stomach than is requisite. The combinations of the vitriolic acid with copper and zinc are known to produce most violent contractions of the stomach, and are very violent emetics :—antimony in doses sufficient to excite vomiting is often a very unsafe medicine, and most certainly should never be given as an emetic to children :—I here assert it as a most unquestionable truth, that more than one fine child who has been made to swallow an antimonial emetic, has died suddenly almost immediately, and, on examination of the body, the contents of the stomach have been found in

the cavity of the abdomen, owing to the coats of the stomach being ruptured by the violence of its muscular contraction.—The safest emetics are indisputably ipecacuan and squill :—the former, where it is intended simply to unload the stomach, and the oxymel of squill, commonly combined with a small quantity of powder of ipecacuan to render its emetic effects more certain, where the lungs or any other part may be likely to receive any benefit from any portion of the squill, which may be absorbed from the stomach :—wine of ipecacuan is fortunately so extremely nauseous that few patients will be satisfied to take it in an emetic dose, and this and all other vinous preparations are extremely improper to be given as emetics :—wine, to make glad the heart of man, or in other words, to fortify his stomach and improve his

digestion, is most absurdly combined with nauseating emetic matter to make him sick, and stop the process of digestion altogether for a time. Few instances indeed now occur of the exhibition of undiluted emetic wine to produce vomiting, nevertheless some cases have occurred within my memory, where the patients have suffered very much during its long and nauseous operation, and have been plagued with nausea for a very long time afterwards, particularly when the thought of their intolerable draught occurred to them :—moderate doses of powder of ipecacuan in water, or with oxymel of squill, or combined with half a grain of tartarized antimony if greater effect be wanted, are the safest forms of emetic medicine ;—and these should be repeated at intervals of a quarter of an hour or twenty minutes till

vomiting be produced ; these forms are now very commonly in use, but for the reasons alleged above, the antimony should not be added unless the patient be of proper age, and possesses sufficient fortitude to drink chamamile tea, or some such warm fluid, as soon as the contractions of the stomach take place :—a moderate quantity of such fluid should be taken and repeated after each act of vomiting, but the practice of making a patient swallow several pints in any one interval between the efforts to vomit is very injurious, for by distending the stomach beyond its usual greatest distention, the villous membrane being stretched out can never recover its former state of contraction, (6) and the muscular fibres will have sustained an injury from having been stretched beyond their tone.

64. In the state resembling apoplexy and arising from fulness of the stomach, (25) and where such poisons have been swallowed as do not produce any immediate chemical action on the stomach, the immediate use of the stronger emetics in considerable dose is not only justifiable, but they must not be omitted.

65. When efforts to vomit can with some degree of certainty be traced to depend on some indigestible matter in the stomach, which cannot pass the pylorus, emetics are requisite, and here the mild form, and the repetition of the dose till gentle vomiting be produced, require the strictest attention. This state of the stomach sometimes, though rarely, occurs in fevers; but in this disease the vomiting much more frequently depends on febrile

irritation of the stomach, or on sympathy with the head, and emetics are not to be given till it be ascertained that the contents of the stomach cannot be corrected, or carried off by the more mild operation of a gentle purgative;—and where an emetic has been previously given and the patient has afterwards followed proper rules of diet, there can be little reason for the repetition of such treatment:—but, as has been said (59) the symptom of vomiting originates from the improper induction of it by an emetic power:—this symptom is also often found to depend on the injudicious administration of opium and other medicines.

66. In cases of scarlatina or ulcerated sore throat, the practice of giving emetics has very generally obtained, to evacuate by the mouth the offensive matter, which

is found lodged in the fauces, œsophagus, and trachea, and thereby to prevent the mischievous effects of large quantities of this matter when passed into the stomach ; and in a few instances this practice may be worthy of approbation, where the patient is in a state of stupor, and the respiration is impeded from the lodgment of this matter in large quantity, which he cannot expectorate :—but in some instances where these aggravated symptoms have appeared, I have succeeded in giving relief, by injecting with a syringe the contrayerva gargle prescribed by Dr. Fothergill, in his account of the putrid sore throat ; by the assiduous use of which the patient has been quickly roused to expectorate, and to wash the throat frequently with the gargle, without assistance. The stomachs of patients thus relieved have immediately borne the

diet and medicines calculated to promote their recovery, and they have rapidly recovered:—in this and in all complaints accompanied with febrile action, as well as in idiopathic fever, it cannot be too strongly impressed on the mind of the medical practitioner that he is not wantonly to sport with medicines to produce vomiting, lest he deprive the stomach of that portion of digesting power, which it would otherwise retain, and which is so highly essential to the well-doing of his patient. On the same principle that emetics are allowable in this disease their use may sometimes also be admitted in natural small-pox, and in croup.

67. It is difficult to detect the primary alteration of action produced in the human body by the infection of hooping-cough: this disease is very commonly communi-

cated from one individual to another by a kiss, and probably something is in this manner mixed with the mucus of the mouth and conveyed through the trachea to the lungs, and through the œsophagus to the stomach ; that the primæ viæ are much affected in this complaint must be allowed, and where the cough is violent and long continued, the hepatic system seems also to be affected, since the fæces are without the due proportion of bile, and it is very likely that spasim is communicated to all the viscera, and indeed sometimes it shews itself by general convulsions :—that gentle emetics composed of powder of ipecacuan and oxymel of squill are sometimes very useful in this disease is most certain, and this particularly in young children ; in whom, from their inability to expectorate, the disease is most dangerous :

they are often however employed in this complaint without any manifest advantage, even when repeated every two or three days, so as to produce very copious vomiting : much depends on the age of the patient and on the inclemency of the season.

A little girl at the age of eight months, in the midst of a very hard winter, when cold north-east winds were for several months unusually prevalent, suffered most severely from hooping-cough ; she had had every possible attention given to her, as to the repetition of emetics, the state of the bowels, proper defence from the severity of the weather, and to diet, all proper expectorants had been employed, when one day she was brought to me in a breathless state, when I happened to be in the house, with death-like countenance and livid lips, her eyes rolling and sunk,

and apparently in a state never to breathe again ; I immediately applied my lips to those of my little patient, and by forcing repeated artificial inspirations, a shrill sound like that of croup was produced in her trachea, and her animation which before was almost gone, appeared more fluctuating ; in a few minutes, a warm-water bath was procured, and by the help of this and the repetition of artificial inspiration, in about an hour she was restored to the state in which she was before this violent paroxysm had seized her. During this period she had two or three times been taken out of the warm bath, and each time she sank into the same dying state in which she had appeared at first. It became necessary to have the warm bath night and day in readiness for two months, and a person to assist the

respiration, and to put her, as occasion might require, into the warm bath.

All remedies reasonable and unreasonable were tried ; the repetition of emetics produced no good effect ; cicuta did mischief, as I have good reason, from my own patient observation, to believe it commonly does in this complaint ; small doses of calomel with sufficient purging, leeches to the breast, blisters, and oxymel of squill as an expectorant mixed with a small proportion of syrup of poppy, with the warm bath, to which she most certainly owes her life, afforded the most essential relief, but she was not free from the disease till the summer was far advanced, when, as the mildness of the weather increased, her distressing symptoms diminished, and she is now a healthy child eight years old.—The more obstinate ad-

vocates for cicuta in this complaint would probably have persevered the whole time in its use, and, had the child survived, would have attributed her recovery to this poison, and not to the milder atmosphere, and they might have stated that the previous inclemency of the season could not have affected her, as it was perfectly easy to make an artificial climate for her in the room where she lived:—Every possible attention of this kind however was given; that she could not have survived if she had been exposed to the cold wind is undeniable, and it is equally so, that she shewed no appearances of permanent amendment till the mild weather in spring ensued.

68. In all cases of inflammatory affection of any part contained within the thorax, the operation of an emetic, with-

out giving any relief, produces great increase of pain, and aggravates the complaint, from the increased pressure on the thoracic viscera occasioned by the action of the diaphragm, abdominal and intercostal muscles in vomiting :—but in some affections of the lungs, without much pain or active inflammation, the immediate consequence of free vomiting is relief to the breath, from the pressure of the contents of the stomach being removed :—Hence in asthma and consumption, emetics have at various times been extolled as performing wonders :—that the removal of such pressure is attended with temporary relief is not disputed, and the important sympathy between the stomach and lungs is to its fullest extent allowed : but it is at the same time contended that the pressure of the contents of the stomach is

much more safely and easily removed by the operation of a drachm or two of Epsom salt, or of some other purgative; that the secretion of the lungs is equally increased by the action of the purgative; and that the relief obtained is altogether at least equal to that which is the result of an emetic: since sudden and violent propulsion of the blood through every part of the system, and especially through the lungs, is the immediate effect of vomiting, it is reasonable to suppose that hæmorrhagy from the lungs in phthisis will be the effect of emetics, and that though the efforts to vomit relieve the lungs at the instant, by increasing expectoration and clearing them of any offensive matter collected in the branches of the trachea, thereby giving transitory pleasurable sensations, yet that is to be expected which

in fact takes place ; the shock given to the lungs by efforts to vomit, increases the suppurative disposition in them ; and the load of matter upon them is quickly increased :—in asthma the result is nearly the same :—Both complaints are marked in their progress with increasing debility ; and the sure effect of repetition of emetics is to destroy the digestion, not only to the increase of the general debility, but to that of the load of indigestible matter in the stomach, which is a never-failing source of aggravated difficulty of respiration ; and indeed the exhibition of emetics in pulmonary complaints is now very rarely sanctioned by physicians.

69. A most absurd speculator in physic, who published his heterogeneous treatises before the middle of the last century, seems to have astonished his readers by

his misapplication of mathematical, algebraical, and mechanical calculation to the science of medicine; ^t is still esteemed by professors, and has ben quoted by several authors, both old and young, almost to the present day, as a respectable authority for the use of emetics in various hæmorrhages, and particularly in hæmoptysis and in other pulmonary affections:—It cannot be necessary to refute argumentatively his fundamental principle, that where the propulsion of the blood to all parts of the body generally is increased, the quantity of it passing to the part affected will be proportionally diminished:—since this will hold true only of fluid in inanimate tubes where

^t Dr. Bryan Robinson's Treatise of the Animal Cœconomy. 8vo. Dublin, 1734. *passim*:—Dissertation on Food and Discharges. 8vo. Lond. 1748. page 113:—Observations on Virtues and Operations of Medicines. Lond. 1752. page 62. 145.

the vis a tergo is not increased ; and he has reasoned on the vascular system of the human body in like manner :—that hæmorrhagy may and sometimes does cease, when an emetic medicine begins to produce nausea, from the general sympathetic faintness attended with decreased general action of the vascular system, is allowed ; but that the act of vomiting, like every other muscular effort produces violent and irregular circulation, and particularly in the heart and lungs, from the sudden pressure made on them, is equally certain ; and that where the muscular action of a living artery is more than is natural, it will be still further increased by any augmented action of the heart, and by the same means which increase the action of the other arteries of the body :—And any reduction of the circulation, after the

action of an emetic, can depend only on the emptied state of the stomach, and on the collapse of the system which ensues after every violent exertion :—Now such collapse of the system may at all times when necessary in hæmorrhagy be more properly induced by bleeding, and the stomach should be emptied as occasion may require by purging, which without inducing any violent effort, gradually diminishes the increased circulation.

When Dr. Robinson informs us that “frequent vomiting in women with child “is of service, as it prevents abortion,” we clearly see that his observation is not the result of any laborious attention to women in that state, and are induced to believe that all his statements are grounded only on the preconceived theory of the hydraulic motion of fluids; and when he

says that “under a course of vomits, the “diet ought to be of a strengthening and “warming nature,” we are fully convinced how deleterious his practice must have been in hæmorrhagy, and that we must not rely on the cases, seventeen in number, which he has adduced; ^u—four only of these are cases of hæmorrhagy from the lungs; two of them died, and we are left in uncertainty as to the fate of the remaining two; the rest are miscellaneous cases, almost all of which would probably have done better without emetics.

70. In epilepsy however, and in chorea Sancti Viti, emetics are sometimes useful: in the former disease, the sudden propulsion of blood to the head from vomiting seems likely to be injurious, and in fact the epileptic symptoms are in some in-

^u Cases, 1, 3. 4, 9.

stances aggravated by emetics; but where the mineral tonics and all other means are ineffectual, emetics should be tried, as now and then a case occurs of their preventing the recurrence of the paroxysms: the promotion of absorption by emetics is to be observed, as in the case of inflamed testicle or of tumid joints, and it is probable that some absorption takes place from the brain when emetics have been successfully given in epilepsy.—In dropsy the operation of emetics is hazardous, but it was probably from the effect of absorption produced, that Sydenham cured dropsies by them, though diuretics and the stronger purgatives answer the purpose of evacuating the watery fluid much better; it appears to be principally the emptiness of the stomach produced by an emetic, which stimulates to absorption and causes

any superabundant matter to be taken up, in order to supply the temporary want of aliment to the blood; and the emptiness of both the stomach and bowels from purging has the same effect in promoting absorption:—it may however perhaps be granted, that the absorbent vessels in sustaining a portion of the general shock in the operation of an emetic, may be suddenly excited to action:—the reasoning however on the promotion of absorption by emetics in pulmonary and many other cases has been carried much too far:—and to conclude, it should never be forgotten that every emetic gives a violent shock to the constitution as well as to the stomach, and it is to be hoped that the time will soon come when these medicines may never be exhibited, except in cases of poison or immediate suffocation, without

the sanction of some physician of sagacity and experience.—It is presumed that almost every case in which they are justly applicable has been noticed in this chapter.

CHAPTER II.

TREATMENT OF ACIDITIES OF THE
STOMACH.

71. IN the common acidities of the fluids in the stomach (17), evacuation from the bowels, by the help of medicine, is always necessary, whether the attack be accompanied with costiveness or with diarrhea : The acid is rapidly communicated through the intestinal canal, from one end to the other, and not only prevents the further formation of healthy chyle, but alters the state of that already formed, so as to render it totally unfit for the nourishment of the body, and the whole contents of the primeæ viæ become an irritating mass, from

which state they cannot be recovered, and the sooner the strength of the patient will bear their intire removal the better: in this state of disease, the operation of calomel is deservedly in high estimation: from its nature, and the smallness of the quantity necessary to produce the requisite effect, it may be taken without being tasted, and it commonly produces no nausea or vomiting, when a fluid purgative would instantly have this effect, from its irritation on the already irritated stomach, and from the sympathy of that viscus with the organs of taste and smell when offended by such medicine: the mode of operation of calomel, and its quickness of action, also highly contribute to render it eminently useful; it instantly excites copious mucous secretion from the glands of the stomach, which contributes to dilute and wash away

the offending acid, and a considerable portion of this medicine quickly passing the pylorus augments the secretion of bile, the natural corrector of acid ; and that of the pancreas, producing further dilution. It may be given in doses from one grain to five, or even in larger quantity, according to the age and strength of the patient, and repeated as occasion may require. In an hour or two after its exhibition, the stomach will commonly bear some directly purgative matter, which it would not before, and this should now be given to insure the passage of the calomel through the bowels, and increase the purgative effect. The object in this case being to evacuate the contents of the primæ viæ ; rhubarb, from its known action in increasing the peristaltic motion is often preferred, and, on comparative trials, is

found commonly to answer best. It may be given in powder, or in a draught with peppermint or some other aromatic water, and may occasionally be quickened by an admixture of jalap, or scammony, or by Rochelle salt, or any neutral salt: some few stomachs, however, have such antipathy to rhubarb as not to retain it in any form, and, in this case, any other tolerably quickly acting purgative must be substituted: In young children infusions of rhubarb, raw or toasted, are very convenient forms of medicine, and commonly the addition of a little aq. kali, or spt. ammoniae comp. is useful; it is best to make the infusion with dill-water, or some such warm menstrum, to obviate the flatulency which distresses them; the mixture may be sweetened with manna to increase its purgative effect, and a small proportion of

vitriolated kali, as the least nauseous, or any other neutral purgative, may be added if occasion should require : mixtures with tincture of rhubarb and some such distilled water, are likewise often very useful in promoting the intended effects of calomel, where the flatulency or griping is distressing : One great advantage of these forms is, that they may be given to children in divided doses, so as not to produce too violent effect at once, and may be repeated two or three times every day, so as to keep up a gentle increase of the alvine discharge during the continuance of the complaint, and thereby they often prevent the necessity of the frequent repetition of calomel, or other more active purgatives.

72. If, after evacuations have been procured, the stools become thin and green,

and are attended with griping and flatulency, some form of calcareous earth should be exhibited; this happens in children, and is commonly best obviated by the addition of testaceous powder, and sometimes a little syrup of poppy, to some such rhubarb mixture as has been just mentioned; and even then the complaint will frequently be renewed, so as very soon again to require the immediate action of calomel: in older persons, where diarrhea continues after acid has been formed in the stomach, when the proper evacuations have been made, it is well known that a draught or bolus of rhubarb, with opium, at night will have good effect, and this medicine may be given with chalk-mixture, or testaceous powder; or the latter medicines may be repeated, at intervals, with a few

drops of laudanum, with aromatic medicine, and sometimes with some vegetable astringent.

Too much reliance has very commonly been made on calcareous earth and the alkalies in this complaint; though they undoubtedly have their use, yet, from their early and indiscriminate exhibition, the disease has been greatly aggravated; the insoluble compound, formed by chalk, with the acid in the stomach, increases the load and irritation in the bowels; the febrile symptoms are in consequence increased, and particularly the burning heat on the skin of the abdomen. The use of kali or natron is more reasonable, as they form a neutral purgative salt in the stomach when in this state; their effect, however, is inadequate to the production of the requisite evacuation.

73. To remove the cause, is, in this complaint, the great indication:—that emetics would evacuate a part of the acid by the mouth is undeniable; but the irrefragable argument against them, is, as has been stated, (59, &c.) that their unnatural action weakens the stomach, and renders it less able to prevent the spontaneous changes of the food:—besides, by the exhibition of an emetic, much time is lost, while the acid collection in the intestines is increasing. When the stomach is once sickened by an emetic, it often will not, for some hours, bear calomel or any other medicine to produce evacuations by stool, which are most essential to the cure. I have repeatedly observed, in this complaint, that it has continued longer, where emetics have been given, than where dependence has been placed on purgatives

alone.—James's powder, antimonial wine, and other sudorifics are often exhibited in this state of stomach, and always without any advantage, unless by chance they operate by stool; the burning skin induces practitioners to prescribe them, but this and every other febrile symptom are effectually removed by calomel and purgatives, and by nothing else; by means of which, what has been named the infantile remittent fever has in very many instances been prevented.

74. Strict attention to diet in this complaint is requisite:—while the acid is in the stomach, the power of digestion is gone, and there is no desire for food, which could not be useful; there is commonly thirst; and dilution, as has been said, is beneficial; barley water in abundance is to be given, and any similar fluid; rice

gruel, as being less ready to ferment than decoction of oatmeal, and from the quantity of mucilage it contains, is a most excellent demulcent and diluent in acidities of the primæ viæ :—when the stomach is liberated from the irritating cause, the appetite returns, and the return to customary food must be very gradual ; any food should be given in very small quantities at a time, and in general, rice and a sufficient portion of light animal food are found to be useful when the stomach is disposed frequently to admit the formation of acid :—where attacks of this kind are frequent, all the rules of diet must be followed, which are requisite in weak stomachs (§ 76). In young children, dry flour baked, as mentioned by Dr. Underwood, and made into victuals with water and a moderate portion of refined sugar, is very useful in checking

the fermentative disposition, and thereby preventing too solid a curd from being formed in the stomach by the milk from the breast.

75. Relapses into this state of disease are always to be apprehended ; to prevent them, soda water is very serviceable, both from the carbonic acid gas and from the alkali it contains, the one proving gently tonic to the stomach, and the other correcting the superabundant acid : and it is commonly necessary to continue the use of rhubarb, or some other purgative with alkaline and slight bitter medicines (§ 93) for a length of time, where the complaint shews a disposition to return, which is commonly the case.

CHAPTER III.

TREATMENT OF MARASMUS ; AND OF THE STOMACH, WHEN ENFEEBLED IN OLD AGE.

76. THE great reliance for the recovery of the action of the stomach, in the kind of marasmus, which depends on the injuries which this viscus has sustained from improper aliment (§ 22), is upon strict adherence to right rules of diet and to the right mode of taking it. It is a proverbial rule to eat when hunger provokes, yet more complaints of the stomach are induced by following this rule to satiety, than from any other single cause :—in marasmus, and indeed in all cases of debility of the stomach, it is most essentially necessary to eat

only a small quantity of light food at a time, since the powers of the stomach are impaired by long fasting, and much more so by repletion.—Rice in milk, puddings and gruel, should form a great part of the aliment:—jellies, blanc-manger, and other similar matters may often be allowed: broth, for the most part, fills and disturbs the stomach; solid meat must very cautiously be admitted; ripe and baked fruit in this complaint is often salutary, when given in sparing quantity, and its effects must be narrowly observed:—fibrous vegetables, as being commonly digested with difficulty, and as running rapidly into fermentation, are to be avoided:—wine must be given very sparingly and any quantity of aromatic matter is prejudicial:—asses milk is often beneficial, cows' milk alone, or mixed with water, will sometimes prove

easy of digestion ; and it may frequently be made much more so, by being mixed with soda water (§ 75) ; and as cold fluids are sometimes disagreeable to the stomach, in taking soda water with milk, this inconvenience may be avoided by boiling the milk and then pouring the soda water upon it :—whatever food be taken, little should be allowed at a time, and that little should be frequently repeated.

77. The usual means of managing a disposition to vomit are frequently necessary in marasmus, as this symptom frequently occurs :—the draught composed of kali with distilled common mint water, given in effervescence with lemon-juice ; and vitriolic acid, added to common mint-water which has been rubbed with conserve of roses and strained, or in the form of infusum rosæ ; sometimes relieve the vomit-

ing : sometimes relief from this distressing symptom cannot be procured without opium ; and in all cases, where opium is intended to act upon the primæ viæ, it is best to give it in a solid form, the advantage of which is that it gradually dissolves and produces its effect on the parts to which it is immediately applied, without its acting powerfully and suddenly on the stomach ; such action is almost invariably the consequence of opium taken in solution, and is quickly followed by increased debility in the powers of digestion :—many cases are daily occurring, where people are taking their customary nightly dose of opium by drops and spoonfulls, and are plagued in the morning with head-achs, languor, sickness and indigestion, and many persons, who have suffered in this manner and have afterwards taken an equal pro-

portion of solid opium, have felt equal relief and been free from these mischievous effects.—In these cases of vomiting, two grains of opium, which is as much as a patient in this state of health ought to possess at a time, should be divided into six or eight pills, one of these should be taken as a dose, when the vomiting requires it, and the pill may be repeated if necessary to the suspension of the symptom.—It is particularly to be observed, that neither opium, nor any management whatever, will relieve the vomiting, if the patient be suffered to remain costive ;—and at the same time, that the presence of costiveness or the disposition to it, is not to prevent the exhibition of opium for the relief of vomiting, for its operation in checking intestinal secretion and peristaltic motion, is easily obviated by the use of

purgative medicines:—even in the habitually costive state of bowels, opium given in a moderate and necessary quantity, scarcely adds to the difficulty of obtaining effect from purgatives.

78. In the common form of marasmus from injury sustained by the stomach and with fulness and torpor of the neighbouring viscera, mercury is requisite; yet the debility is such, that frequent repetitions of large doses of calomel are injurious; fractional parts of a grain given daily for a length of time are sometimes very beneficial, and advantage may in some cases be derived from mixing the calomel with sagapenum, or with the gum-pill: it is of the greatest consequence to keep the bowels free in every case of this disease, though in the weakened state of the stomach, it is wrong to irritate it by purgatives acting

roughly upon it; and when such cases occur as require but little stimulus to be applied to the gall-ducts, aloetic preparations are found to be the best purgatives, as they do not produce much effect till they reach the lower part of the intestines :—if it appear on the contrary from pressure on the part, or from the sensations of the patient, that there is much affection of the liver, spleen or pancreas, the external use of mercury in moderate quantity must be adopted, (§ 98) particularly when there is also much uneasiness at the stomach, and internal medicines are borne with difficulty.

79. What has been said on light purgatives and bitters (71. 75.) and on their being mixed with alkaline matter, is of at least equal importance in marasmus. In the progress of cure, chalybeate waters, or

slight preparations of steel, are sometimes of service :—the skin is often hard and dry, and the tepid sea-bath is found useful: it is to be observed that bathing in the sea is more useful in cases of weakness of the system and where the stomach has only its proportional share of weakness, it is however sometimes of assistance in recovery from this kind of marasmus.

80. When the powers of the stomach are destroyed in old age, and the appetite is gone probably never to return, more stimulus is requisite than in the disease of which the treatment has here been considered : the same means however are to be employed to relieve the vomiting (77.) except that in this case opiates should be blended with aromatics :—Madeira, Hock, or other generous wines must be given, either alone, or mixed with food

which is easily soluble, and which contains a large portion of nourishment in a small compass:—the usual puddings, and gelatinous food of various kinds proper to be mixed with wine, and varied from time to time to suit the capricious state of the stomach, are to be offered but are most commonly refused by the patient:—it may be descending a little from professional dignity to insert here the following culinary preparation; it is added however as it has sometimes been found to rally the powers of digestion in this state of the stomach, as well as in that fastidious state of it, which frequently occurs after long fits of the gout, and where both the stomach and the constitution have been injured by repeated and irregular attacks of that disease.—The preparation is in some respects similar to what is called

savory jelly, which last however is a much more solid extract of animal matter, and is commonly loaded with tarragon, pepper, and a variety of seasoning, from both which circumstances it becomes less suitable to a debilitated stomach.

About two pounds of lean beef cut in slices, with the hock of a ham of about the same weight, and a knuckle of veal weighing about eight or ten pounds, and a moderate quantity of mace and salt without any other spice, are to be covered with water in a stock-pot, and to be stewed about seven hours and then strained; the strained liquor when cold, becomes a thick jelly, from which the fat is to be taken off; the jelly is then to be cleared with whites of eggs, and passed through a jelly-bag:—the produce in jelly, from the above proportions of meat, should be

about six quarts; a table-spoonful of which, made fluid over the fire, may be taken once in an hour, or every two or three hours, as may be found best to suit the individual stomach for which it is prepared.

CHAPTER IV.

TREATMENT OF REPLETION OF THE
STOMACH.

81. THE collection of viscous matter in the stomach coming on in shoemakers and others, from a bent posture, (23), frequently yields to a very old and simple combination of medicine, that of sagapenum with aloes, in pills or a bolus, which may be given two or three times a day, and repeated, till sufficient evacuation be produced, which is often all that is requisite;—it is as well, however, to give this medicine with strong cold infusion of chamomile, or a little tincture of gentian in

water, to excite the stomach to its proper action. It is obvious, where the occupation of the patient will allow of avoiding that posture, which is the sole cause of his malady, that this is all which is necessary to prevent its return : from the force of habit, however, directions to this effect are seldom sufficiently obeyed : where the case has been of long standing, or there have been frequent repetitions of the attacks, and the lungs, liver, and other viscera, some or all of them become affected, the treatment must be adapted to the state of those parts :—riding on horseback daily will do much service ; and many a working tradesman, having lately entered into some corps of volunteers, has learned to carry his person better, and been afterwards free from this complaint ; whilst, before he had the drill-serjeant's assist-

ance, it was difficult to make him stand erect at any time.

82. The overfilled stomach, which brings the patient into an apoplectic state (25), is a case which requires the instantaneous exhibition of the most powerful emetics (64); a strong solution of vitriolated zinc is the most proper medicine for this purpose; it is preferable to any form of antimony, because the latter, even in a very large dose, will commonly have no emetic effect at all in the torpid state of the stomach, which is here the alarming symptom, but the patient will be thrown by it into a violent debilitating perspiration, and the time for relieving his stomach and saving his life will be lost for ever. As soon as the stomach is relieved, and the efforts to vomit have ceased, a large dose

of mercurial purgative should be given, and he will commonly require all the after treatment necessary for a stomach in a state of debility, and particularly the use of acrid stimuli (114.)

CHAPTER V.

TREATMENT WHEN POISON HAS BEEN
SWALLOWED.

83. WHEN narcotic poison has been introduced into the stomach, (30) the same remedies must be applied, which have just been mentioned(82):—Where the situation of the patient has not been soon enough discovered, and the stupor continues after the exhibition of emetics and purgatives, or during the operation of the latter; ammonia in any form, poured into the stomach, will often prove of great advantage in relieving the stupor;—I have observed where opium has been inadvertently swallowed, and an alarming stupor has con-

tinued for many hours, notwithstanding every effort made by the by-standers, that a spoonful of a strong solution of ammonia has awakened the patient, and enabled him by words to express the benefit he has received from it, and by repetition of it as the stupor returns, the sensibility and irritability is gradually restored; each repetition of the dose being commonly followed by more permanent relief.—In the case mentioned (31.) draughts with ammonia quickly overcame the symptoms produced by *hyoscyamus*.

84. The treatment of *colica pictonum*, (29) the effect of the poison of lead, by opium and purgatives, is too well understood to need much illustration here;—this practice was first published by * Dr.

* *Treatise of the Diseases most frequent in the West Indies, more particularly of those which occur in Barbadoes.*—8vo. Lond. 1726. pag. 91. et seq.

Towne, whose directions for the cure of this complaint are well worthy of notice : he says that “ we are to employ our utmost endeavours to remove the constitution of the bowels and solicit them to a discharge, but this is not to be attempted by strong stimulating cathartics ; ”—he states the symptoms which ensue from such violent medicines, and then adds as follows. “ The mild lenitive detergent purges are to be relied on in this exigency, and they ought to be given in liquid forms, small quantities, moderately warm, and frequently repeated till they slide through the bowels and procure a stool :—but it is almost impossible that this should be effected so long as the bowels continue under such spasmodical disorders as they are now in, we must therefore have due

" regard to this inconveniency :—It has
" been a received opinion that opiates in
" this distemper have often proved the
" occasion of the paralytic consequences
" which have ensued; but I am fully con-
" vinced from undoubted experience that
" this observation is erroneous, having
" always found the desired success from
" the administration of them, though
" given with a liberal hand."—The merit
of this observer is such as ought never to
be forgotten: he proceeds to state the
particular forms of solid opium and of
mild purgatives which he prescribed; and
that assistance was to be derived from
clysters, fomentations, and warm-bath,
till at length the stronger purgatives be-
came safely applicable.—He recommends
a removal from the West-Indies to Bath,
when the paralytic symptoms are per-

manent :—but it is not necessary to tire the reader with further quotations from Dr. Towne, particularly as the late justly eminent Dr. Warren has very neatly and succinctly, in a short paper, lain down the rules of practice in this affection. ^y I have only to add, that no advantage is to be derived from vomiting, or even from washing out the stomach with chamamile tea ; that the saline purgatives commonly operate mildly, and are sufficiently efficacious, whilst the stronger purgatives, even when the symptoms are nearly removed, often bring back the pain ; and that relapses are commonly to be prevented by instructing the patient how to proceed, and by providing him for a length of time with opium in pills and mild purga-

^y Medical Transactions of the College of Physicians in London. Vol. 2. pag. 68.

tive medicine, the first to be taken on the most trifling recurrence of the pain to which he has been accustomed, and the purgative on the smallest approach to costiveness.

85. When poison of acrid nature (27) has been swallowed, which either by its chemical action, or its powerful stimulus, injures the stomach, the treatment adapted to inflammation of the stomach is to be pursued, and very plentiful dilution with solutions of gum arabic, suet in milk, and other mucilaginous and oily demulcents must be insisted upon :—when the nature of the acrid matter is such that it can be rendered mild by neutralization ; diluted acid, or alkali, or absorbent earth, must be given, according to the chemical compound which it is intended to form in the stomach :—when the acrid matter is con-

tained in any substance, which remains any length of time in the stomach as is the case where acrid vegetable matter has been eaten in salad, both emetics and purgatives must be employed, and in this case, the stronger medicines of these classes are injurious ; the situation of the patient is totally different from that in which torpor of the stomach is to be overcome ; there is very commonly spontaneous vomiting, and repeated draughts of chamomile tea, or at most a little ipecacuan, will be sufficient to produce the intended medical effect ; and afterwards the mild and quickly operating neutral purgatives are the most proper, with these some rhubarb should be mixed, as it is intended to clear the primæ viæ of their contents.

86. When cantharides (35) have been taken into the stomach, the treatment re-

quisite is the same as that for any other acrid poison. In whatever manner the stimulus of cantharides may have been introduced so as to affect the bladder, if drinking plentiful solutions of gum be insufficient to relieve the strangury, this troublesome symptom may commonly be removed by the use and repetition of small clysters of mucilage of starch, mixed with a sufficient quantity of tincture of opium.

CHAPTER VI.

TREATMENT OF ORGANIC AFFECTIONS.

87. LITTLE ultimate success can ever attend our efforts in the treatment of these affections, whether the disease be from thickening, or contraction, or ulceration, or schirrus of the stomach, or any of the various affections of the pylorus. Strict attention to the rules of diet (§ 76) is essential to the protraction of the unfortunate patient's life; since, without such caution, the process of digestion and consequent nourishment of the body, cannot go on at all; cocoa, chocolate and other light mucilaginous and oily matter are

sometimes beneficial; great suffering is almost always produced if much aliment be taken at once, even from satisfying the thirst, when it is prevalent, by a copious draught of any mild fluid:—vomiting can be relieved only by the means mentioned (§ 77); in organic affections this symptom and the pain commonly require the frequent repetition of opium in pills. The comfort of the patient very much depends on the prudence of his medical attendant in avoiding every thing that can act briskly on the stomach, which always aggravates the complaint:—it is necessary that the evacuation from the bowels should be regular, and if a little magnesia or other mild opening medicine sit easily on the stomach, it must be given from time to time,—but it is much better to depend wholly on clysters than to increase the

patient's sufferings or induce vomiting by purgative medicines :—aromatic plaasters with a large quantity of opium applied to the region of the stomach appear sometimes useful :—quiet and proper warmth of clothing are indispensable :—warm-bathing sometimes affords relief, but the relaxation it produces commonly too much exhausts the patient ; fomentations to the scrofula cordis commonly bring on faintness and vomiting :—cicuta and other narcotics are in some cases applicable. There is good reason to believe that ulcers of the stomach have sometimes been healed by very cautious management.

CHAPTER VII.

TREATMENT OF THE STOMACH AND ABDOMINAL VISCERA AFTER RESIDENCE IN HOT CLIMATES.

88. THOSE who return from the East and West Indies, on their arrival in this country, commonly complain of some of the symptoms described (§ 39): it often happens that they are fully aware of the necessity of strict attention to medicine, and sometimes they increase the debility, which always affects them, by the continued use of mercury in large quantity and by powerful evacuants; sometimes, their appetite being generally impaired and fastidious, they persevere in the use of

dishes heated by currie-powder and other spices, by means of which their complaints have been in a great measure produced; and upon the same principle, they hurry to Bath, to restore an impaired digestion before their obstructions are removed, and thus their disease is aggravated and kept up.—The state of the stomach in such persons, may well be compared to that of a horse upon a long journey, who has been pushed hard at the outset; when he has performed but a small part of his task, his strength and spirit fail him, and the rider too often treats him as some East and West Indians do their stomachs:—he claps his spurs into him, which send him on again for a mile or two, till at last the poor animal is to be urged no farther by such means, but merely starts a few steps forward on each kick he receives from his

master, and he can never reach the end of his destined journey, but is ruined in his paces, his spirit and his ability, for ever.

89. Castor-oil for two reasons is worthy of particular observation :—first, because it is in great use with many medical men of high professional character, and secondly because families, who are become acquainted with its properties, use it as freely as rhubarb has been improvidently used in this country.

Dr. Canvane^z allows that the kernel, from which the oil is extracted, is very acrimonious and will sometimes work upwards and downwards in a violent manner. Bergius^a states that a healthy man, who at

^a Dissertation on Oleum Ricini. P. 6. 8vo. London, 1769.

^b Bergii Materia Medica. P. 773. 8vo. Holmiæ, 1778.

night chewed and swallowed one of the seeds from which the oil is extracted, first perceived a biting sensation about the fauces, and on the following morning was seized with a violent vomiting, and that efforts of vomiting and purging continued through the day.—Professor Murray^b has cited very numerous testimonies, both ancient and modern, of the acrimony of these seeds. It appears, from the accounts given by all who have written on the subject, that the oil is one thing, and the purgative matter another; that the purgative matter becomes mixed with the oil, in greater or smaller proportion according to the state of the seeds at the time of extracting the oil, and to the different modes of preparing it, by expression or otherwise.—The above

^b Apparatus Medicaminum. Vol. 4. P. 198. 8vo.
Gottingæ, 1787.

authorities are adduced in confirmation of practical observations made by myself; I have known this oil reproduce spasm after colica pictonum, and bloody flux in dysenteric cases;—I have commonly and repeatedly found it to produce very violent gripings, and when a purgative with oil of almonds has been given to the very same patients, the effect has been mild and moderate; and in cases where oily purgatives are required, as in large collections of fæces in the colon, and in nephritic complaints, it always appears to me to be best, to add a proportion of senna or other mild purgative matter, of which the effects in any given quantity are pretty exactly ascertained, to oil of sweet almonds or oil of olives.—It is true, that many families know the preparation of their own castor-oil, and soon ascertain the dose which will

prove moderate in effect, and when the only object is to open the bowels, it is of little importance whether castor-oil or any other purgative be selected :—it is only intended here to impress that the purgative matter contained in this oil is very acrimonious, and that the mildest and strongest preparations of castor-oil differ only in their strength, not in their nature ; since, when intirely free from the purgative matter, which is found principally in the husk of the seed, it is not more purgative than any other mild expressed oil. It appears probable, that medical men as well as private families have imposed upon themselves by forming a hasty conclusion, that because oil is demulcent, castor-oil must be mild in its effects.

The principal effect of any oily matter in purgatives, is to make them slide quickly

through the stomach and small intestines, and consequently to produce little action till they descend to the lower portion of the intestinal canal, and hence it happens that any griping, which comes on during the action of castor-oil or any other oily purgative, is commonly referred to that part of the bowels.—Now, in that state of the viscera, the treatment of which is here considered, the principal effect of a purgative should be on the stomach itself and in the duodenum ; and there are purgatives, which are presently to be mentioned, and which fully accomplish this intention, whilst the exhibition of castor-oil would be like pouring water into the hall to run down into the cellars, when the upper part of the house is on fire.

go. Cheltenham water has deservedly acquired its reputation in this constitution

of the body, from the very circumstance of its immediate action on the stomach and duodenum :—after a little gentle exercise a glass of this water is taken, and immediately shews its mild, but beneficial, effects on the stomach itself :—exercise is renewed, and another glass of the waters renews the effect on the stomach ; and it is thus, by the frequent repetition of the dose, and the consequent renewal of action several times in the day on the stomach and on the ductus communis choledochus, that this water often succeeds better than any form of medicine. I have frequently acted upon the hint given by Dr. Saunders,^c where the business or connexions of my patient have prevented a journey to Cheltenham, and have directed a very small portion of

^c Treatise on the Liver. Part 2. Chap. 1, § 13.
8vo. London, 1795.

neutral purgative salt to be dissolved in a quart of water, with the addition of a few drops of *tinctura ferri muriati*, and the half or the whole of this to be taken in a day, in doses from a quarter to half of a pint at a time, and have always enjoined exercise between each draught of the medicated water ; this method has commonly been attended with advantage, and in some instances has been very effectual :—it is difficult however to make people rise early, and go about sufficiently, when they have only to send for their bottle from their closet in order to procure their dose, and some circumstances of mental application or distress commonly occur from the same causes which prevented their distant journey, and combine to prevent that alacrity, which is so useful towards recovery, and to render them irregular in the application of

the means which they have been directed to employ.

91. The exhibition of mercury, in the innumerable instances of hepatic affection in the East and West-Indies, is acknowledged by all to be indispensable:—in this country when the liver, from previous residence in a hot climate, is found in the state mentioned (§ 40), mercury must be exhibited so as to produce considerable immediate and permanent action of this viscous, in the manner which is to be pointed out in the next chapter (§ 98).—In many cases which occur in this climate, but more particularly in most of those which occur in the East or West Indies, the bile is known to be formed in greatly superabundant quantity, and mercury given in large or small doses, but not so as to produce any long continued action on the liver

or on the system, gives great relief; and it is equally well known that, where there is a deficiency of bile, mercury, given in the same manner, is essentially necessary to procure its secretion:—since the preparations of this metal are so beneficial, both where too much and where too little bile is formed; it appears, till its primary action be duly considered, to produce two very opposite effects. Now the rationale of its action seems to be this; when taken into the stomach, its stimulus is immediately produced on the primæ viæ, and particularly on the stomach and duodenum, and its effect on the gall-ducts increases the discharge of bile:—where the liver was before gorged with the increased quantity of its own secretion; and by the superabundance of materials, conveyed to it by the blood-vessels, for such secretion; these

materials are more easily converted into bile, and the bile when formed, is more easily evacuated from the liver, the general energy of the hepatic system having been increased by the mercurial stimulus on the gall-ducts, and the consequent biliary evacuation through them.—By the same action of mercury in the duodenum, the secretion of bile is increased, when it has been deficient; it excites the gall-ducts to discharge whatever they may contain, in consequence of which, the action of the pori biliarii is renewed to supply the gall-ducts, and it follows that the secretory action of the liver is increased. Where alternations of increased and diminished flow of bile take place (§ 38), the maxim “*festina lente*” is well worthy of being held in remembrance by the medical attendant, as it is most justly applicable to the treat-

ment of these complaints with mercury; very small doses of which, daily repeated have the effect by the action just described, of relieving the liver, when it is too much loaded; and of gently exciting its action, when it is deficient; whilst at the same time, such small doses of mercury by very moderately increasing the secretion of the stomach itself, contribute much to its restoration from the effects of the injuries it has sustained from climate, and from too much spice and other stimulus introduced into the stomach. By the use, every night for a month or two, or for a longer space of time, of so small a dose as half a grain of calomel, I have sometimes had the satisfaction to find patients daily and permanently improving in flesh, strength, appetite, and digestion; when before this plan was adopted, under the occasional use of

strong mercurial or other purgatives, their strength and flesh were wasting, the powers of digestion were becoming more and more impaired, the spasms and flatulency in the stomach and bowels were very distressing, and the flow of bile very irregular :—by such exhibition of small doses of calomel at night, the patient often becomes no longer a stranger to comfortable, quiet and refreshing sleep, which he had before in vain attempted to obtain by means of opium :—I have several times been thanked by different patients for the opium I had prescribed the day before, and the supposed consequent good night's-rest ; when in fact the calomel had taken off general irritation by its action in the primæ viæ, and not a particle of opium or any narcotic medicine had been given. It is sometimes necessary to increase the daily

dose of calomel, the propriety of which can only be ascertained by minute attention to the peculiar circumstances of each case which may occur, and particularly by due examination of the excretions.

92. The same cautions, which have been stated as requisite in the exhibition of mercury, are equally so in regard to purgative medicines:—it must never be forgotten that the main object is to regulate the action of the stomach, liver, and all the viscera, and not to hurry them into violent evacuation:—in these constitutions of the body; if vertigo be frequently or constantly present, it is commonly found to depend on obstructed circulation from visceral affection, and in this case the frequent repetition of moderate purgatives is particularly beneficial:—the constant use of a proper quantity of mer-

cury is here commonly necessary ; and an ounce, or less of infusion of senna with some pimento water given every day, or every second day, will commonly procure two or three evacuations ; it is commonly less debilitating if a little tincture of gentian be added to it, and it may be quickened by the addition of a little purgative salt :—this form of purgative is generally sufficiently powerful, and the dose may be increased, or repeated if necessary after the interval of a few hours ; the repetition of the weaker dose however is commonly preferable for the reasons mentioned (§ 90.) When vertigo is not present, and calomel is employed, a draught occasionally in the morning consisting of a scruple or half a drachm of rhubarb, and a drachm of neutral salt, in mint water, will very frequently be suffi-

cient ;—and sometimes a drachm or two of neutral purgative salt, taken occasionally, early in the morning and repeated at intervals of an hour till evacuation be procured, proves useful and pleasant in its operation :—and here it is to be observed that the supersaturation of the magnesia in Epsom salt by the addition of vitriolic acid, is a great improvement of that medicine, as it makes it less unpalatable and less offensive to the stomach ; the best vehicle for it is common water, for in the common mode of dissolving it in the infusion of roses, the flavor of the roses is completely changed by the salt, and the mixture is much more disgusting, than that with the salt, acid, and common water ; if any cordial addition to it be judged necessary, a little brandy or any almost tasteless spirit or tincture is the most

proper.—Purgative medicines in the form of pills are for the most part improper, as they pass undissolved to the lower part of the intestines, (§ 89) and this is a contra-indication to the use of aloës;—however when aloëtic powder, in very small quantity, is made into pills with rhubarb, myrrh, and extract of chamamile, it is sometimes admissible; these pills taken at night will remain a long time in the stomach and give it tone, while they gently evacuate its contents through the pylorus and obviate costiveness, but they must be avoided if the patient be troubled with hæmorrhoids, or any habitual irritation of the bowels:—these and all purgatives in solid form must be very cautiously admitted in this complaint, and only as a variety, where fluid purgatives have tired and disgusted the patient by long and repeated

exhibition :—sometimes however these pills and other similar preparations are useful in aid of Cheltenham water, when inadequate to its intended effect.

93. Bitter tonic medicines are very useful in these complaints of East and West Indians, and it is commonly more agreeable to the stomach that one bitter medicine should be changed for another, at intervals of a week or two :—where the bile is habitually deficient, bitter matter is requisite to be taken, as a substitute for it in digestion, but it is always to be remembered that the intention is to strengthen the powers of digestion, not to stimulate or offend them by too powerful means.— Many, especially young, practitioners have incautiously fallen into the error of giving bitters in very strong infusion, even in cases of great debility of the stomach,

but it is a certain practical fact, that light infusions or other preparations of bitters, best suit such cases, and are better borne by the stomach.—The bark for the most part is too powerful for this complaint in any form ;—when its use is indicated in cases of want of bile, where as has been said there is commonly prevalence of acid in the stomach (§ 17), one of the best forms of it is that given by Dr. Skeete,^d of bark triturated with magnesia in cold distilled water ;—upon the same principle the cold infusion of bark in lime-water is now and then applicable, when the bowels are sufficiently open or too much so ;—and the various tinctures of bark, in doses not exceeding a drachm, and taken in a glass-full of water, are often proper ;—the

^d Experiments and Observations on Bark. Pag. 48.
8vo. Lond. 1786.

same is to be observed of all the bitter tinctures ;—powder of columbo, of chama-mile, and their infusions, the compound infusion of gentian, its extract, and that of chamamile, and various other bitter preparations, are to be selected at various times and in various cases, and prescribed in moderate dose :—it is often very useful to mix with these tonics, a small portion of purgative matter, so as to produce constantly almost imperceptible effect, upon the principle stated (§ 90) and to prevent the necessity of so frequent occasional purging doses ; with this view 20 drops of rhubarb in tincture, or a grain or two of it in powder, will often be sufficient with each dose of bitter medicine ; when mixed with the bitter medicine, its exhibition is not followed by constipation, which so frequently ensues upon repeated doses of it

being given alone :—the combination of bitter medicine with natron or kali, as in the form of extract with natron in pills, suggested by Dr. Beddoes,^{*} is in this complaint also frequently indicated, (§ 75) as well as the use of soda water :—and sometimes preparations of squill or colchicum should be added to bitter medicine, or the diuretic salt to infusions of bark, where the urine is high colored, or its secretion is irregular or deficient in quantity.

The doses of bitter medicine should be given three times a day : early in the morning, an hour or two before dinner, and between seven and nine in the evening :—the exhibition of it at bed-time

^{*} Observations on Calculus, Sea-Scurvy, &c. Pag. 10.
8vo. Lond. 1793.

is not so proper, as the stomach is not then to be supplied with food for many hours.

94. Much caution is requisite as to the exhibition of steel as a medicine in these cases, and in the use of chalybeate waters unimpregnated with any purgative salt :—where the circulation is languid, and the powers of sanguification weak, (§ 21) they are worthy of consideration, and should be employed, provided that they do not produce any unpleasant affection of the head, or improperly increase the heat of the body, which will uniformly be the case, where any permanent visceral obstruction remains.

95. Vomiting, when it occurs, is to be relieved by the means pointed out (§ 77) for this symptom ; for that of pain in the stomach, opium is very often absolutely necessary, and the solid form of it, and

the repetition of the smallest efficient doses, is in this state of the stomach particularly preferable:—when the sense of sinking in the stomach is distressing, and particularly where this symptom occurs with cardialgia, the best stimulus is the compound spirit of ammonia, in camphor mixture or in some other light vehicle;—this is much less injurious to the digestive organs, than æther or any other strong spirituous preparation, or than aromatic confection, or any other spice in large quantity; and it is frequently useful in conquering the patient's habit of taking high seasoned dishes:—it is sometimes not only useful but necessary to be gradual in breaking this habit, and it is commonly best to allow a few glasses of generous wine, requesting the patient at the same time to avoid all spirituous liquor; a little

wine is often well applied, as it enables him the sooner to take his aliment without high seasoning.—When the patient is convalescent, drinking Bath water, in moderation and with strict attention to the state of the bowels, often proves a most excellent restorative; and repeated visits alternately to Cheltenham and Bath are of great service:—as to diet, in some cases all the attentions requisite in a weak state of stomach are applicable:—generally however it is desirable that the patient should eat moderately of any light meat.

96. Emetic and sudorific medicines are commonly prejudicial; the first, from disturbing the stomach and the system generally; and the last from increasing debility:—in certain states however of visceral obstruction, bathing in warm sea-

water is highly advantageous; and, when these are removed, bathing in the sea is useful, provided that the sensations of the patient are grateful to himself, whilst he is in the sea and after bathing.—As to the other external applications, sometimes mercurial ointment (§ 91 & 98) and mercurial plaisters to the epigastric and hypochondriac regions are proper, and sometimes relief is given by plaisters composed of the odoriferous gums with opium, and sometimes by strong liniments rubbed upon these parts.—Blisters tease the patient without giving him any assistance, and the soreness which they occasion, commonly increases the disposition to inactivity.—When there is great disease in the liver, an issue or seton a little above the margin of the ribs on the right side, has sometimes afforded relief.—The patient

should be encouraged to take such moderate exercise as his strength will bear ; riding on horseback is to be recommended to those, to whom it is easy ; and short sailing excursions are sometimes advantageous.

97. It is impossible in a short treatise to give the treatment of all symptomatic diseases, which sometimes ensue :—Gout, apoplexy, jaundice, dropsy, glandular affection, hæmorrhagy and melæna, and other diseases often require attention, in the investigation of their seats and causes, and as to the treatment to be followed, in those who have suffered and are suffering from the complaint which has here been considered ; and, in our attention to these appearances, we are not to lose sight of the original affection :—at a future time I may probably arrange for publication,

some observations on these collateral subjects.—What is here offered is the result of observation and attention to the cases of patients; and it is hoped may serve in some degree to settle the opinions of medical men as to the practice proper to be adopted.

CHAPTER VIII.

TREATMENT OF THAT STATE OF THE STOMACH AND ABDOMINAL VISCERA, WHICH IS INDUCED BY HARD DRINKING.

98. To introduce mercury into the system, so as to act powerfully on the liver, is the object which medical men attempt to accomplish in cases of this kind. Now, since mercury cannot produce its effect on the liver in any other manner, than by the change of action in the blood-vessels and absorbents consequent upon its stimulus, it is to be considered how far all or any of these actions are affected by it;—and this consideration is the more important from its having been stated by Dr. Saunders,

Dr. Pemberton and others, that mercury should be rubbed on the hypochondria, in preference to any other part, only because the mere friction upon the liver may be useful.

The hepatic artery being very small, comparatively with the size of the liver, and as there is no possible reason to suppose that this artery is more affected by mercury, in any case of diseased liver, or in any other disease, than each individual artery in the body, there is little reason to suppose that any great effect can be produced on the liver from any alteration in the action of this artery, consequent upon the use of mercury.

The influence of mercury on the veins has not at any time been proved to be considerable:—on the contrary, from all anatomical and physiological observation, it

appears when taken into the blood-vessels to increase secretion generally, and that the power of any given quantity of mercury is exhausted in its operation on the salivary and excretory glands:—nor is there any reason, from any observation made on its action on the vena portarum, to suppose that its action on this vein, is greater than what it induces in any other vein in the body.

It follows then, that the action of mercury on the blood-vessels of the liver, is proportionally to the size of this viscus, less considerable than on almost any other part of the body.

The effect of mercury in producing absorption is obvious to the most superficial observation:—this effect probably depends, in some measure, on the necessity for absorption to supply the blood-vessels in com-

pensation for the waste occasioned by the evacuant effects of mercury. When the liver is enlarged as in some cases of persons, who have resided in the East and West-Indies (§ 40), when it is tuberculated, or when it is schirrous, as from the effects of spirituous liquors, the absorption of the adventitious or altered substance in the organic construction of the part, is the indication which principally demands attention, and from the known effect of friction in promoting absorption, it is reasonable from the benefit to be expected from friction alone, that mercury should be rubbed on the epigastric and hypochondriac regions rather than on any other part:— there is however the best ground for believing, that mercury, taken into the stomach or rubbed upon the skin near the liver, produces a much more immediate

effect on the hepatic absorbents, and that these modes of its application are consequently, for this reason, especially, by far the best.

This effect of mercury on the absorbents is now to be explained.—

If a patient has a node on the shin, any Surgeon would point out the absurdity of rubbing mercury on the scrotum for the cure of it; and in a case of enlarged epididymis, he would justly ridicule the treatment of it by rubbing mercury on the shin :—from the anastomoses of the superficial with the deeper seated absorbents, the epididymis is cured by mercurial frictions on the scrotum, and the node by similar frictions on the shin.

From the anatomical demonstrations and preparations of Mr. Cruikshank, I became aware, very early in my professional

studies, of the great variety and importance of the multiplicity of anastomoses made by the absorbents. In his work on the absorbents^f he describes them as remarkably numerous in the liver and on its surface, and proves the anastomosis of such as are superficial with those that are deeper seated, from having very commonly injected the last, by pouring mercury into the first; that the trunks of several absorbents of the liver perforate the diaphragm and pass into glands on the fore part of the pericardium, from which glands a large trunk emerges, which runs under the sternum between the laminæ of the anterior mediastinum:—he describes another,^g which is commonly the principal trunk of the he-

^f Anatomy of the absorbing vessels of the human body, by William Cruikshank. 4to. London, 1786. Page 167. 2nd Edition, 1790. P. 182.

^g First Edition, page 168. 2nd Edit. P. 186.

patic absorbents, and has seen the whole convex surface of the liver covered with its branches; this large absorbent vessel and the trunk from the upper surface of the small lobe of the liver, perforate the diaphragm, and afterwards take the circular sweep of the ribs, and run from behind forward to the glands on the fore part of the pericardium, and frequently communicates with others, which run with the phrenic nerves:—he had also often observed numerous trunks of these vessels, after perforating the diaphragm, to join some of the absorbents on its upper surface, forming a plexus, which runs with the mammary arteries^h and veins of each side under the cartilages of the ribs:—the absorbents on the diaphragm he proved also to be exceedingly numerous and so blended

^h First Edition, 170. 2nd edit. 187.

with those of the liver, that it was impossible for him to describe the one without the other,ⁱ and many of these he found to accompany the phrenic nerves, and the mammary arteries.

Now the internal mammary artery, of which Mr. Cruikshank speaks, gives branches^k to the intercostal muscles ; passing between the cartilages of the ribs, to the great pectoral and other muscles, to the nipple, to the adipose membrane, and to the skin :—it anastomoses with the external mammary and other thoracic arteries particularly in the great pectoral muscle, and with the intercostal arteries ; and coming out by the side of the xiphoid cartilage is expanded into the rectus ab-

ⁱ First Edition, 172. 2nd edition, 189.

^k Winslow Exposition anatomique, traité des Artères
§ 88, &c.

dominis muscle; it certainly communicates with the epigastric artery and gives branches to the anterior parts of the oblique and transverse muscles of the abdomen. Since every where on the surface of the body absorbent vessels accompany arteries and veins in more than two-fold proportion, it follows that a considerable portion of the mercury rubbed upon the skin of the epigastrium and right hypochondrium will pass immediately by some of the cutaneous absorbents into the trunks which come from the liver, and there is good reason to believe that many of these cutaneous absorbents pass between the pleura and the peritoneum both above and below the diaphragm, and unite with the absorbents of the liver upon that muscle, every where not only accompanying the minute arteries and veins, but wander-

ing and rambling about, as expressed by Mr. Cruikshank, in a very remarkable manner; and hence it appears that mercury thus absorbed must as certainly affect the absorbents of the liver, as blood taken from any vein will give room for more blood to follow to the bleeding part from the smaller veins nearer the extremities: and upon this principle, there being commonly a trunk of the absorbents of the right side, as described by Mr. Cruikshank,¹ unconnected with the thoracic duct; this, though not the principal reason, is a sufficient one, for applying mercurial ointment in the manner here pointed out:—since this trunk belongs to the right lobe of the liver and all the upper quarter of the body on that side.

¹ First Edition, 159. 2nd edit. 176.

Further it is to be observed that the absorbents of the stomach and those conveying the chyle, often called the lacteals, anastomose freely with those from the liver, and therefore that mercury taken inwardly, will, when absorbed, immediately pass through and stimulate the absorbents coming out of the liver:—Mr. Cruikshank states in his second edition^m that he “ saw “ them filled with chyle from the mesen-“ tery, and which had passed through the “ substance of the liver, to the number of “ three hundred or more:”—as this obser-“ vation must be considered to be correct, it not only strengthens the position here made, but it greatly elucidates the opera-“ tion of alkohol in producing schirrus of the liver, which, as has already been men-

^m P. 190.

tioned (§ 42), is but ill explained by the doctrine of sympathy, nor can it be better understood by considering the general stimulus applied, or that which is applied to the extremities of the vena portarum in the intestinal canal.—By further anatomical research it seems highly probable, that some of the absorbents of the stomach or intestines, or of both, will be found always to pass through the liver; and that that peculiar state of the liver, called a schirrus, is always the consequence of drinking alkohol freely, from the inflammatory, or at least peculiar, stimulus of the alkohol, when absorbed, on the absorbent vessel itself; and that it is owing to the very large proportion of absorbent vessels in the liver, that this viscus is so constantly the seat of disease in hard drinkers.

The operation of mercury on the stomach and ductus communis choledochus, is at least of equal importance in schirrous liver, as in the state of disease the treatment of which has been considered (§ 91), and mercurial purgatives must frequently be employed:—when any benefit is to be expected from the absorption or continued action of mercury, unguentum hydargyri fortius of the London Pharmacopœia, consisting of equal parts of quicksilver and lard, must be rubbed nightly on the epigastric and hypochondriac regions in moderate quantity, or repeated doses of mercury are to be taken internally, and, if salivation ensue, it must be discontinued only till the mouth be well.

99. The attention to the use of purgatives (§ 92) is still more requisite in cases

of schirrous liver, and in this case the more drastic purgatives are often requisite:—when there is permanent vertigo, advantage is derived, during the mercurial course particularly, from the bitter purging draught in somewhat stronger form, and sometimes repeated as often as two or three times every day:—for this symptom, cupping also is frequently necessary; in these cases, the state of the urine must be assiduously watched, and if it be deficient the squill or some other diuretic must be exhibited, since it is much easier to prevent a dropsy before the exhalants have given out a quantity of watry fluid into any cavity, than to make the absorbents take it up again, when any such collection is formed;—ascites will however very often ensue, the treatment of which gives too large a field to be expatiated upon here;

some hints on this subject have already been given (§ 33): the observations on mercury, purgatives, and bitter medicines, (§ 91, 92, 93) require attention also in that state of the stomach and abdominal viscera which is the consequence of hard drinking:—to persons in this state of disease the process at Cheltenham is often very fatiguing, and the power of that spring is generally insufficient to answer any purpose of benefit.

100. It has always appeared to me to be best, though contrary to the generally received opinion, to enjoin these patients at first, totally to abstain from spirits;—it must be acknowledged however that the depraved habit of some people renders the injunction fruitless; if the craving after strong drink be invincible, a limited quantity of wine may be allowed, and assistance

in breaking this habit may often be procured from volatile salt as a substitute for a dram, and this may sometimes be mixed with aromatic confection, or, where nausea or pain in the stomach is troublesome, with that in which opium is an ingredient:— solid opium will sometimes be necessary to relieve these symptoms (§ 77):—it is better to prescribe æther than to allow of spirituous potion, and nitrous æther is sometimes really useful in these cases.— Bath water very frequently restores the appetite, but must be taken with great caution whilst visceral obstructions remain. Much walking commonly renders these people more prone to fall into a dropsy:— moderate exercise must however be employed; riding on horseback, or in a carriage, or sailing, are to be recommended.

CHAPTER IX.

TREATMENT OF PYROSIS.

101. THOUGH this complaint, (§ 44) particularly in poor people, will often continue for a length of time, and is apt to return, yet the treatment of it is very simple : the stomach will commonly bear three or four considerable doses of bark, even in powder, in twenty four hours ; and bark or other strong tonics are the means of cure :—my common prescription for it is a mixture of decoction and tincture of bark with aromatic confection ; sometimes the addition of kali acetatum appears useful, it promotes the discharge of urine, and pro-

bably in this manner causes the watry fluid to be absorbed from the primæ viæ ; sometimes opiate confection or mithridate must be substituted for the aromatic, and, where there is great pain at the stomach, solid opium must be given :—these means, with better living in a form that is easily digestible, and due attention to the bowels, are all that appear requisite.

CHAPTER X.

TREATMENT OF HÆMORRHAGY FROM
THE STOMACH AND MELÆNA.

102. FREE purging, with neutral salts as being the purgatives which excite least action in the primæ viæ, is absolutely necessary in hæmorrhages from these parts; (§ 45) and acids are very useful, both in checking the hæmorrhagy, and in preventing the putrefactive fermentation in the extravasated blood:—other astringents also have their value, but are superseded by the lead-pill, (§ 29) which in this case I have always found safe, effectual, and almost instantaneous in prevent-

ing further extravasation ; during its use, which is commonly necessary only for a very short time, acids must be laid aside, and repeated soon after the lead is discontinued :—cold water, rennet-whey, light mucilaginous food, and oily drinks if the stomach will bear them, should be given nearly cold, and these form the proper diet.—The propriety of general bleeding depends on the general state of the patient ; and the repetition of opium, on the pain he suffers.—In those who vomit blood on the cessation of the hæmorrhoids ; and in women, where hæmorrhagy from the stomach is vicarial to menstruation, or comes on at its final cessation, repeated gentle purgatives effect the cure, and are sometimes aided by topical bleeding.

103. In melæna, though the langour of the patient may be excessive, and faint-

ings may occur, it will always be found that these symptoms are diminished, and that the powers of the body are increased, by procuring gentle evacuations from the bowels, this is explained by what has been mentioned (§ 46) :—wine and æther may be safely given to support the patient during such evacuations.—When the pain and flatulency are distressing, which is very commonly the case for a long time after the black discharges have ceased, solid opium (§ 77) is requisite:—æther, light aromatics, and tonics, to which often some light purgative matter should be added, (§ 93) afford relief from flatulency: when this complaint is preceded or followed by venous plethora, as frequently happens, bleeding with leeches and repeated ammoniacal stimulus are very advantageously applied. It is unnecessary

to add, that attention must be given to the state of any viscus, the disease in which may have induced melæna, and that when this disease has once occurred, it will always be of consequence to keep the bowels open. By the means here pointed out, I have succeeded in restoring patients, even when much advanced in years.

104. A case occurred, in which that very troublesome symptom to old people the prurigo senilis came on, after a violent attack of melæna :—when many lotions and other external applications had been applied in vain, infusion of galls, to wash the parts affected, afforded the greatest relief :—it appeared to me, that both the melæna and the prurigo, neither of which have returned, depended very much on venous plethora and on diminished muscular action in the heart and arteries :—

after the cessation of the melæna, the patient seemed to derive advantage from a plan calculated to promote the circulation.

105. Dr. Home^a employed bleeding, vomiting, and mercurial purgatives in melæna :—he relates only three cases, and all these patients he bled ;—it is true that they were young or middle-aged people, and that he was himself a great friend to bleeding in every hæmorrhagy ; from the account he gives, it is probable that a disposition to active hæmorrhagy might remain in his patients, but in true melæna, the languor is so excessive as to forbid venæ-section :—in two of the cases he employed emetics, but his own conclusion is that they are to be shunned^b in

^a Clinical Experiments and Histories. P. 128. 8vo.
1783.

^b Lib. cit. P. 142.

this disease, and in the third case, he states fainting and vomiting a pound of pure blood to have quickly followed an emetic dose. On what principle he could have prescribed mercurial purges is inexplicable ; since, by their strong stimulus on the primæ viæ, they must greatly tend to the renewal of hæmorrhagy, and it does not appear that any considerable retention of fæces was to be obviated.

CHAPTER XI.

TREATMENT OF HYPOCHONDRIASIS AND
SICK-HEAD-ACH.

106. IN all cases of this kind, whether of original affection of the primæ viæ, or symptomatic of chlorosis or any other affection, little good can be done without unremitting attention to the regularity of evacuation from the bowels, which is essentially necessary to the subduing of acid when habitually formed in the stomach, and towards gaining any ground in the removal of pain, flatulency, and every other dyspeptic symptom, and the means of attempting to affect this regularity in

different persons, and in the same person at different times, must be exceedingly varied;—now and then a case occurs with an habitually lax state of the bowels, and only rhubarb is requisite as a purgative, joined with light aromatics, but commonly we have to contend with constipation, and rhubarb by itself does mischief:—when the stomach and bowels are loaded and foul, powerful doses of mercurial purgatives are occasionally necessary, particularly in those whose blood-vessels are full, and whose energies are considerable. When this state of the system is indicated by laboring action of the heart, which is perceived by the patient, or by vertigo, depending upon repletion of the blood-vessels, it is to be relieved by cupping:—and if the secretion of the bile be deficient or irregular, the repetition of a grain of

calomel daily or every other day, for some time (§ 91) will often prove very useful :—but it sometimes happens that the liver is acting well, and that the bile, though duly secreted, is an insufficient stimulus to the bowels, either from its being neutralized or altered by the acid which passes from the stomach to the duodenum, or from the bowels being in a state too permanently torpid to be excited by it :—in such cases the repeated use of calomel or its being commonly given as a purgative, is injurious; as also in some cases which frequently occur where there is a continued defect of bile, as in chlorotic young women; and in some debilitated male patients, who have long labored under impaired digestion and hypo-chondriac affection :—here the quantity of aliment assimilated (§ 21) into blood

is inadequate to the production of a sufficiency of bile, and the encouragement of its secretion by means of mercury would be only to exhaust the system by increasing the action of one part in augmentation of the debility of the whole ;—the proper quantity of bile cannot be properly or permanently in such cases procured, except by increasing the powers of assimilation and the general strength, which being obtained, the torpidity of the bowels is commonly very much overcome ; but these powers cannot be improved without the liberation of the stomach from acid matter, which cannot be effected without open bowels : all practical Physicians are well aware of the difficulties they have to encounter in the very obstinate state of constipation which is frequently found in such patients, and to point out the medicines

to be tried would be to run over the whole class of cathartics in the *materia medica*: Hæmorrhoids are very commonly the consequence of those purgatives which are long in their operation, and which consequently particularly stimulate the great intestines; their production is always to be avoided if possible, not only on account of the trouble they always give, and of the severe pain which they sometimes occasion, but on account of the weakness which they induce when they bleed, and of the venous plethora, which occasionally ensues and produces affections of the head and other troublesome symptoms, when much blood is retarded in its proper progress in the reservoir formed by these dilated veins, and they are on any way accidentally pressed upon, as particularly by indurated fæces in the rectum; where any plethora

prevails, the fluid purgatives are commonly the best, since plethora assists in producing hæmorrhoids ;—Infusion of senna with neutral salts, which it is necessary sometimes to quicken with tincture of senna or of jalap, passes off readily and is safe and tolerably easy in its operation, if its dose and the proper repetition of it be ascertained by observation on its effects in producing moderate evacuation in every individual patient, and castor-oil, and other oily purgatives, are sometimes proper in this state of bowels : The socotrine aloe is a most useful medicine in cases of loaded bowels, both from the convenience with which it may be taken, and from its almost certain operation on the great intestines :—in chlorosis and some other cases of female health, it is particularly applicable, from the stimu-

lus being conveyed to the uterine system ; but women are particularly subject to piles from habitual costiveness, and from the larger capacity of the pelvis, which allows of greater dilatation of every part contained in it, than that of men.—When symptoms of hæmorrhoids or their approach have appeared, and generally where there is any fulness with laxity of fibre, alöes, from the certainty with which they assist in producing hæmorrhoidal affections, must not on any account be employed : powder of jalap or scammony are but little more advisable ; colocynth, but not with alöes as in the form of extractum colocynthidis compositum, and others of the stronger purgatives which may be given in a solid form, and are not of a resinous nature, are sometimes necessary :—About a table-spoonful of tincture

of senna rendered more grateful to the stomach by the admixture of a little tincture of lavender or of ginger, and taken at bed-time without any admixture of water, will often cause a more easy night's rest, and operate mildly in the morning ; this is very useful in preventing the necessity of the too frequent repetition of more bulky or more violent cathartics ;— On the same principle, electuary of senna, and the various domestic preparations of that drug and of other mild laxatives have their uses, for it is always to be remembered, that violent purging is not the intention to be accomplished, but only permanent regularity of evacuation.—The aid of clysters should sometimes be obtained, particularly when there appears to be a large collection of indurated fæces in the colon ;—this is sometimes evident from

hardness in the track of the colon, which may be felt in the umbilical and left iliac regions, and this in itself has sometimes produced strong hypochondriac symptoms, attended with dyspepsia, and spasm in the stomach and in the extremities, and particularly with pain and numbness in the left lower extremity :—here a clyster of colocynth, or of soft soap, gives the greatest relief: but the frequent use of clysters is exceedingly injurious, they destroy the tone of the great intestines, and in consequence the whole intestinal canal suffers ;—this may be proved from the numerous cases of French Emigrants, who are habitually costive from the use of clysters, and many of whom suffer from true hypochondriasis.

107. The different alkaline and earthy matters used in medicine, seem to promise

relief in these diseases, but this expectation is seldom in any great degree fulfilled :— Magnesia commonly does little by itself, and seldom seems of much use when combined with other purgative matter ; its preparation with bark however (§ 93) is sometimes advantageously employed :— as long as costiveness prevails, any of the preparations of calcareous earth are inadmissible, and they commonly bring on febrile heat, and increase the impediments to digestion ; sometimes however in long continued cases of acidity on the stomach, attended with head-ach and considerable hypochondriac affection, where the bowels are tolerably free, or under easy controul, much advantage may sometimes be derived from perseverance in the use of lime-water prepared with oyster-shells, as a more pure form of calcareous earth than that which

is dug out of a chalk-pit; and from bark prepared with lime-water:—The addition of natron or aq. kali to bark or other bitters, is sometimes advantageous, particularly if the case be complicated with glandular affection; in the same manner soda-water is beneficial, and from the tonic power of the light carbonic acid it contains; the good effect of ammonia taken into the stomach, may depend in some measure on its alkaline nature, but seems principally to be produced by its grateful stimulus, both in the form in which it is taken; and after it may have been combined into a neutral ammoniacal salt by union with any acid it may meet with. Nothing however can be more capricious than the stomach in hypochondriacs and in all these diseases where acidity habitually prevails;—it is particularly to be

noticed that vitriolic acid with bark or without it, is often essentially useful, and this, where acidity in the stomach is continual; the utility of this acid is certainly in defiance of all chemical reasoning, and may depend upon its astringency, whereby it probably prevents the secretion of acid fluid into the stomach, or of such fluid as is ready to become acid, and in some measure on its power of preventing fermentation.—Tonics for the most part are necessary, but it is almost impossible to lay down any form of them to be pursued for any length of time; the stomach is commonly soon disgusted with any individual preparations, and it is often very difficult to suit its variation of aptitude by the most judicious changes of medicine, which however must always be attempted, since there is not any case of disease which

is so frequently aggravated by neglect :— what has been said of tonics (§ 93) as well as of purgatives (§ 92) is in a great measure applicable to this state of stomach, always however observation must be made, how far it may be right or wrong to use those forms which tend to influence the hepatic system.

108. The use of steel is indicated in all cases where there is a deficiency of assimilation of chyle into blood :—as in chlorosis, and in such cases of hypochondriac affection, as are attended with paleness, and, with what is commonly called the phlegmatic temperament ; where however much disorder in the stomach prevails with any symptomatic affection of the head, the symptoms are commonly aggravated by steel ; and any attempt to exhibit it, which it is sometimes requisite to make, redoubles

the necessity of completely obviating costiveness: if any chalybeate water, as that of Tunbridge, or any chemical preparation of steel be employed, it will be necessary to discontinue their use for some time, on the first approach or return of affection of the head:—when the spasm affects the voluntary muscles of the body, the trial of steel is indicated, and its use appears sometimes considerably to contribute to the prevention of the return of dyspeptic symptoms and of pain in the stomach, as well as to the general tone and strength.

109. The spasms about the hypochondria very frequently cannot be relieved without opium, and in this case also the solid form of it is the best, as it is applied constantly by gradual solution to the parts immediately affected, and produces much less injury to the stomach and to the system

than any fluid preparation of it:—but given in any form in hypochondriasis, though it relieve for a short time, it is often followed by increased irritability, and it should not be employed “nisi dignus “vindice nodus.”—Relief from the spasm commonly ensues from the general treatment here laid down; but where this symptom is very troublesome, the various foetid gums in various combinations, and with the addition of castor, will frequently do much good, without the assistance of opium:—valerian also in various doses and forms is often found useful, and particularly the volatile tincture of that drug:—volatile saline medicines generally; and in cases of much flatulency, such medicines combined with aromatics; and the different preparations of æther with aromatics and camphor often have good effect; when the

symptom of vomiting is troublesome, the means (§ 77) are applicable :—flatulency is often much relieved by increasing the muscular action of the stomach and intestines ; and mustard, horse-radish and other such stimuli are useful, either in the forms in which they are served at table, or the mustard-seed may be taken whole, or the officinal and other preparations of horse-radish may be employed (§ 114).—In cases of sick head-ach opium must, as much as possible, be avoided ; to increase the power of the stomach and regulate the bowels are here the principal objects.

110. With regard to external remedies, blisters and other applications soliciting a discharge are commonly very unnecessary torments, and are very seldom justly applicable.—Frictions on the hypochondria with volatile liniments often give very con-

siderable relief; and plaisters with warm gunis are sometimes useful:—the warm pediluvium in some cases may be usefully employed, and bathing in warm sea water or at Buxton:—in the progress of convalescence, bathing in the sea and cold bathing, may often be advantageously employed.

The observations on sea bathing in mærasmus (§ 79) apply however to this case of disease, and it is generally to be observed, that old people for the most part do not bear cold or sea bathing well:—to them, and in cases of long continued fastidious appetite in hypochondriasis, drinking bath water, under proper restriction is more salutary and more grateful.

111. The state of the secretions in hypochondriasis has been sufficiently considered; upon this subject connected with

those of air, exercise, diet, sleep, and the passions, many volumes have been written and applied to this state of health :—and it would be easy to add another volume ; indeed it is much more difficult to compress what is to be said on hypochondriasis, than to avoid every attempt to refute what has been improperly urged respecting this complaint.

The air of large cities is indisputably injurious to almost all debilitated invalids, and for hypochondriasis a pure air is very useful ; at the same time seclusion is baneful to them ; the good effects of a purer atmosphere will be more than counterbalanced, if an hypochondriac shuts himself up constantly by his fire in his country-study, or retires from society in indolence and apprehension ; cold piercing winds are very severely felt by most hypochondriacs

and must be avoided when they prove injurious ; at the same time the propriety of their accustoming themselves to bear the open air as much as circumstances will allow, must ever be impressed upon them ; and proper warmth of clothing, particularly about the feet, must be worn.

Exercise, short of fatigue, is essential ; and even a little fatigue must be endured by those who from long sedentary occupation have lost the habit of exertion ; riding on horseback, or in a carriage, sailing, rowing, are all useful ; also moderate walking, bowling, or working with a spade in the garden, and other exercise out of doors attended with some labor :—it is to be observed however of sick head-ach, that its attacks are frequently induced by the motion of a carriage, boat or ship, and that exercise on foot or horseback is best

for such invalids :—frictions with a flannel or flesh brush, about the hypochondria, and generally over the body, are very useful in all dyspeptic cases, and especially where the debility of the patient prevents much muscular exertion by volition. The use of the dumb-bell and other exercise within doors must be recommended according to circumstances :—and the giving up half an hour or an hour every day to the performance of the military exercise, in an airy place with a few comrades, will often prove to have been a most useful employment of time.

He who lays down a plan of diet for any hypochondriac, from the same having proved exceedingly useful in a similar case, will commonly find himself wrong :—the patient is to be nourished with whatever aliment he can digest, and the same uni-

form reservation as to spices is by no means necessary, provided that they seem to improve, rather than to injure, digestion; his appetite for a moderate quantity of almost any variety of food is to be indulged, provided that no derangement of the stomach ensue from it, and the juvantia and lædentina are to be made out from observation in each case; vinegar and native vegetable acid commonly are prejudicial, yet very commonly ripe fruit is beneficial; commonly every thing that is oily or empyreumatic must be avoided; mustard, horseradish and the like, as has been said (§ 109), are often useful in the prevention of flatulency; sometimes in long cases of hypochondriasis, where vomiting has long been a tiresome symptom, the yolks of eggs boiled hard have been digested, and the vomiting in a short space of time has

ceased ; in these cases it is probable that the stomach is in an habitual state of contraction, as it has been sometimes actually found on dissection, and mustard or horseradish, by increasing its muscular action, would have been injurious, whilst any easily digestible substance nearly solid from not occupying much space would be retained, and gradually distend the stomach, or, from causing the muscular effort produced in vomiting to cease, give opportunity to the stomach to recover its natural dimensions ; eggs, however prepared in any way that has been contrived, will not always agree, even when this state of stomach is to be suspected ; but will be almost immediately rejected or produce much disturbance, when a small quantity of gelatinous or mucilaginous food, or even of light meat will be digested :—it seems far

from reasonable that in all cases light suppers should be prohibited, since it is well known from experiment, that digestion and absorption of chyle go on more perfectly during sleep than at any other time, and it is the best practice in hypochondriasis and all complaints of digestion, to allow frequent but sparing meals:—the proper hour of taking the last meal in the day must depend very much on the sensations of the patient consequent upon it; and it is obvious, if supper be allowed, and tea or coffee also be taken in the afternoon, that the time of dining ought to be more in the middle of the day than is usually practised, so that one meal should not follow another too quickly.

As to the article of drink, it seldom happens that malt liquor can be allowed: Soda water with a little good wine, com-

monly forms a most excellent beverage :— it is rarely proper to require any large quantity of diluting drink to be taken :— coffee generally agrees better than tea ; and sometimes cocoa, or even chocolate, if its oily quality do not offend the stomach, is very proper for breakfast, or in the forenoon.

It is very rarely right to give opium with the view of inducing sleep in these complaints :—much is to be accomplished by regular hours of rising and going to bed ; and by avoiding sleep when out of bed, which not only interferes with the regular habit of sleep to be acquired, but is very commonly followed by some increased symptom of irritation. The operation of a mild purgative commencing at bed-time as has been mentioned (§ 91, 106), sometimes induces quiet sleep :—sometimes the

compositions of the foetid gums also are useful and cause rest, without the increase of irritability, which is brought on by opium:—the tepid pediluvium and some other means, that have been mentioned for different purposes, likewise assist in producing sleep:—when restlessness depends upon palpitation from repletion of the blood-vessels (§ 106); cupping, and sometimes general bleeding, as well as purging, will be requisite to procure quiet and easy sleep.

The mind in hypochondriasis cannot be properly regulated without the best efforts of the patient himself, but he will for the most part be induced to use them, on the representation of a medical man of intelligence and good humor, that it is impossible for him to accomplish any plan he has in view, and that he must always be a

burthen to himself and his connections, till he makes the search after chearfulness and health his primary pursuit ; he must make himself alive to the scene which passes before him, and his family may commonly be instructed in some methods of diverting his attention from dismal reflexions on himself, and from unremitting application to any favorite topic, and gently to remind him of the harm he is about to do himself, when he seems ready to give way to any excess of passion :—his resort to public places will be beneficial, when he can be brought to attend to what is going forward there, and by such attentions his pursuit of health will daily become less irksome and laborious ; and by the same means he must be brought to unbend his mind in the society of his equals, and to attend to the proper times of exercise, food, and rest.

112. It is not intended to extend this treatise by an account of the treatment of hysteria, chlorosis, and melancholia, further than as they are connected with disorder of the stomach, which has already been given; nor to enter more at large upon the cure of hypochondriasis, when complicated with various visceral affection (§ 97) all which complications however claim much attention to their investigation and cure.

CHAPTER XII.

MISCELLANEOUS OBSERVATIONS.

113. AFTER what has been said in the preceding chapters, it will not be necessary to enter separately upon the treatment of pain in the stomach, flatulency, cardialgia and other anomalous symptoms, (§ 53, &c.) it should have been stated that the disease or symptom called soda, is according to the best nosologists, the same with cardialgia, though some confusion has arisen from soda having by some, been made synonymous with pyrosis:—it may be generally stated that pain in the stomach commonly requires opium for its relief; that the ad-

dition of aromatic, spirituous, or volatile matter, must depend upon its being found to be referable to flatulency and spasm ; that sympathetic pain in the stomach, particularly that in young women arising from temporary or permanent uterine affection, requires perseverance in the use of the mildest effectual opiates with quietness and the horizontal posture, and commonly mild warm diluents, as long as the pain continues, or is disposed to return ; and that gouty affections of the stomach require stimulants as well as small doses of opium to be always ready for the patient (§ 55, 56).

114. Some cases of tympanites intestinalis have occurred to me, in which mild purgatives, tonics and carminatives had been long employed, without giving relief, and where all flatulent diet had

been cautiously avoided:—it appears to me that the want of power to contract in the intestinal muscular fibres (§ 56) has been sufficiently noticed by authors as a symptom in this disease, but has not sufficiently influenced their practice.—I long since gave great relief to several patients by prescribing for them the varieties of stimulants used in long continued paralytic diseases, and in some instances have effected a permanent cure :—mustard, horseradish, garlic, eschalots, onions, watercresses, and the rest of the acrid plants were eaten with advantage, and benefit was particularly derived from the perseverance of patients in repeatedly swallowing spoonfuls of whole mustard-seed, and large and repeated doses of conserve of arum.

115. In nettle-rash (§ 58) I have seen great and almost instantaneous relief given by a mixture of light bitter tonics with alkaline and light purgative matter, and particularly by the free use of soda-water :—it is obvious that the same treatment is applicable in the common cases of cardialgia. Relief from a cough, where the trachea has been loaded with mucus, and in paroxysms of asthma, has almost as suddenly been sometimes obtained, by the operation of a drachm or two of Epsom or other neutral salt on the stomach.

116. In considering the treatment of the diseases of the stomach, and of those connected with digestion, the use of purgatives has in every instance been stated to be requisite : this practice obtained at least as much twenty-four years since, when I became an hospital-student, as it

does at present :—and if there be any novelty in what has here been said respecting purgatives, it is in the mode of their combination with medicines not containing purgative matter, and of their exhibition : Dr. James Hamilton,^P not long since, gave to the world some valuable observations on the general use of purgative medicines : it appears however that he has given as a new practice, that which, in this country at least, has long been established, as well in regard to the continued, as to the occasional, use of such medicines :—chorea is known frequently to depend upon foul bowels and worms, and purging has here always been employed for it ;—in chlorosis, marasmus, melæna, and in some chronic disorders, enough has been said

^P Observations on the Utility and Administration of Purgative Medicines. 8vo. Edinburgh, 1805.

in the former parts of this treatise as to the established practice of the use of purgatives;—and many years since, in hospital-practice in London, I have noted the advantages derived from purgative medicines in the early stages of infectious fever;—that delirium, burning heat and other febrile symptoms have been much mitigated by them; that the patients have with greater certainty recovered, and that the time of duration of the fever has been shortened:—but that in the advanced stages of fever, and particularly of scarlatina, that “purgative medicines are to be given to remedy the impaired action of the intestines, and secure the compleat expulsion of their contents,” is inconsistent with the safety of the patient: a single grain of rhubarb mixed with bark

¹ Dr. Hamilton's Treatise. P. 31.

or any other medicine that the patient is to take at regular intervals, and repeated till evacuation be procured, or where the heat of the body is great, the smallest quantity of antimonial powder given in the same manner, will sometimes induce purging, and irrecoverably sink the patient: much less can it be allowed that calomel, aloes, or rochelle salt^r will any of them in reduced doses have a laxative effect only; or that these medicines, senna and jalap, are^s proper chiefly to be employed in fever.

^r P. 10.

^s P. 22.

THE END.

T. CURSON HANSARD, PRINTER,
PETERBOROUGH-COURT, FLEET-STREET.

